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Philip S. CALLAHAN
Paramagnetic Agriculture

Excerpt :

Paramagnetism --
Rediscovering nature's secret force of growth: How to farm properly as god intended
by
Philip Callahan

'The usual subdivision of science into chemical, physical, botanical, and other departments, necessary for the sake of clarity and convenience in teaching, soon began to dominate the outlook and work of these institutions. The problems of agriculture -- a vast biological complex_began to be subdivided much the same way as the teaching of science. Here it was not justified, for the subject dealt with could never be divided, it being beyond the capacity of the plant or animal to sustain its life processes in separate phases. It eats, drinks, breathes, sleeps, digests, moves, sickens, suffers or recovers, and reacts to all its surroundings, friends and enemies in the course of twenty-four-hours. Neither can any of its operations be carried on apart from all the others; in fact, agriculture deals with organized entities, and agriculture research is bound to recognize this truth at the starting point of its investigations,

In doing this, but adopting the artificial divisions of science as at present, established conventional research on a subject like agriculture was bound to involve itself and magnificently has got itself bogged down. An immense amount of work is being done, each tiny portion is a separate compartment; a whole army of investigators has been recruited; a regular 'profession been invented. The absurdity of team work has been devised as a remedy for the fragmentation which need never have occurred. This is nonsensical. Agricultural investigation is so difficult that it will always demand a very special combination of qualities which from the nature of the case is rare. A real investigator for such a subject can never be created by the mere accumulation of the special and rare.

Nevertheless, the administration claims that agricultural research is now organized, having substituted that dreary precept for the soul-shaking principle of that essential freedom needed by the seeker after truth. The natural universe, which is one, has been halved, quartered, fractionized, and woe betide the investigator who looks at any segment other than his own! Departmentalism is recognized in its worst and last form when councils and super-committees are established; they grade (?) the latest exercises, whose purpose is to prevent so-called overlapping... strictly.... to hold each man to his allotted narrow path and above all to enable the bureaucrat to dodge his responsibilities.

--- "The Soil and Health", by Sir Albert Howard

BREAD FROM STONES

Years ago while I was enjoying leisure travels in Ireland, I picked up a book titled "Farming end Gardening for Health and Disease," by Sir Albert Howard. It was read, or I should say scanned, so quickly that I retained only dim memories of its content. What I do remember is that it dwelled on farming techniques in India that have been in use since ancient celtic times by the Irish.

My bible for pre-World War II Irish farming is the masterpiece 'Irish Heritage"by the astute professor of Queens University, Belfast, E. Estyne Evans. It is the only book I have two copies of- one in my lab, and one in my den.

I had, between 1944 end 1946, before deadly chemical farming intruded, lived in Fermanagh County, Northern Ireland on the Donegal border. I was, in truth, a sergeant in the Arrny Air Corps, but may as well have been a 19th-Century potato farmer, for I was far more interested in the natural history and agriculture of the beautiful Erne Valley than I was in the exactitudes of my job as a low-frequency radio range technician.

Liebig, a laboratory chemist, equated life with NKP. I doubt very much if as a lad he ever chewed on a fresh piece of grass on his back while cloud watching. He published Chemistry in theApplication to Agriculture around 1840. His book preceded the great book on soil formation by Charles Darwin titled The Formation of Vegetable Mould Through theActions of Worms, with Observations of Their Habits. This book shines as Darwin's real aura of genius, not his treatise on the unprovable but elegant theory of evolution.God probably has a hundred differentways of creating life, evolution being only one among many. Like creationism, it is a reductionist either/or science. Because Darwin, like Liebig end other biological chemists, overlooked the elegant work of the two T's, John Tyndell and Nikola Tesla, they failed miserably in their understanding of naturel forces. It remained for another chemist, Julius Hensel, to point the way with his beautifully titled book, Bread from Stones. He also had little use for the concepts of von Liebig. He talks about von Liebig's"mistake":

Ideas that are meaningful develop slowly. Sometime, long after I left Ireland, I came to realize that plants, insects and soil (all loves of mine), and the nebulous photons of electronic systems were all in one. Everything is connected to everything to everything else, especially by the electromagnetic spectrum.

If I had really paid much attention to what Sir Albert was writing about I would have, even in my younger days, realized that his life's work was built on a solid foundation and keen understanding of the inner connectedness of all of nature. He had little use for the reductionist method eof modern science. I might add, neither do I! More than any other agricultural scientist of his time he understood that reductionism, like communism, might wel lead to the destruction of viable agriculture.

Physics is the science that connects chemistry to biology. That being so, a scientist that does not have a basic understanding of physics is more ignorant of life than a leaping flea hopper that at least knows it must jump (physics) to feed (chemistry) on a plant (biology).

I was delighted when in the mid 1970s I learned that my editor Devin Garrity of the Devin-Adair Company had published Sir Albert's book in the United States. He gave me a copy of the book under the new title *The Soil and Health*. Needless to say I studied it more thoroughly this time around.

Soil end Health is, of course, about the biological-chemical make up of agriculture. It is one of the original treatises on composting and crop rotation. It also talks about the mess that the German chemist Justus von Liebig stared in agriculture with his "pure" chemistry concept of plant growth.

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Very simply, Liebig was the first agricultural chemist. He found that the ashes which remained from grain mainly consisted of phosphate of potassa. From this he concluded that phosphate of potassa must be restored to the soil, and that was very one-sided Liebig had forgotten so take the straw into account, in which only small quantities of phosphoric acid are found, because this substance during the process of maturing passes from the stalk into the grain. If he had not only calculated the seed but also the roots and the stalks, he would have found what we know

at this day, that in the whole plants there is much more lime and magnesia as potassa and soda, and thal phosphoric acid forms only the tenth part of the sum of these basic constituents. Unfortunately Liebig also was of the opinion that potassa and phosphoric acid have to be restored to the soil as such, while anyone might have concluded that instead of the exhausted soil we must supply earthly matter from which nothing has been grown. Such untouched earthly material of primitive strength we get by pulverizing rocks into which potassa, soda, lime, magnesia, manganese and iron are combined with silica, alumina, phosphoric acid, fluorine and sulfur. Among these substances fluotine, which is found in mica -minerals, has been neglected by Liebig, by all his followers, and has never been contained in any artificial fertilizer. But as we know from later investigations that fluorine is regularly found even in white and yellowbirds' eggs, we must acknowledge it is something essential to the organism. Chickens get this fluorine and other earthy constituents when they have a chance to pick up little slivers of granite. Where this is denied them. as in a wooden hen house, they succumb to chicken cholera and chicken diphtheria. The key to Bread from Stones is contained in this one paragraph where he says, 'we must supply earthy material" and later "little slivers of granite."

His use of the word granite implies that he not only knew that good soil is made from eroded stone but also which kind of stone was best suited to a viable agriculture.

Because he was a chemist, like von Liebig he emphasized the chemical constituents of stone, and therein lies the crux of what this and subsequent articles are about. It is a dismaying fact that there are some rocks, including some granite, that when ground up and added to the soil (they may contain all the afore mentioned chemicals) accomplish little for plant growth.

The simple and irrefutable fact is that if the force, called in the physics handbook paramagnetism, is not in the stone, although certain proportions of the chemicals are, little benefit will accrue.

This series is about that force, one among many, but the one most often missing from poor soil around the world.

Poor soil produces sick plants, and since insects are scavengers they are attracted to both old and sick plants. They are nature's recyclers.

Crop plants should be young as they are harvested to eat. If they are young and healthy, insect losses are almost nil. If they are young and sick, losses from insects can be devastating.

We will deal then with growing healthy plants, but it does not imply excluding the need to learn about the other two necessities of agriculture: composting and soil organisms.

Books on composting and soil organisms abound. Add them to these words, and all of the ingredients of a flourishing and viable agriculture will attain.

Composting, Organisms of the soil, and the Paramagnetic force (COP) might well prevent a worldwide famine from destroying mankind.

One last thought; this is for farmers, but it equally applies to all of an ecological mindset who, in positions of leadership, are attempting to save our wilderness and our wildlife from destruction.

Because plants are healthy and do not attract hoards of insects does not mean that insectivorous wild creatures, e.g.birds, will suffer. The hoards of redwinged blackbirds that descend on corn infested with corn earworm larvae not only further damage the corn, but would live more beneficially in the cattail marshes free from insecticide-contaminated crops.

One half of the population of North America wood warblers has disappeared over the last twenty years-probably due in part to insecticides veld freely by the American agribusiness industry to the Central and South American Countries to which North America warblers migrate. There are few government controls in certain southern regions on the spread of insecticides by the tons. There are more pounds per acre utilized worldwide now than when Rachel Carson wrote Silent Spring, that epic treatise on the subject.

Insecticides and weed killers are the modern curse of environmental health, we do not and never did need them. The simple fact is they both destroy viable soil. A healthy soil ecology through healthy agriculture means a healthy

world population reinforced by that most democratic foundation: the family farm.

VOLCANOES

...The physics of volcano formation is a surface phenomena that follows large earthquakes triggered by a subsurface movement of what geologists call tectonic plates. The earth is made up of a number of such huge platelike platforms floating on a sea of viscous, flowing, iron-rich, glassy rock called magma. The more brittle crust rock on top moves about separating-colliding and triggering powerful interactions that, over eons of time, effect the physical makeup of the earth's surface.These moving continental plates are the mountain and ocean builders of time.

Volcanic cones usually arise and form in chains where the denser subsurface mantle rock is carried by a portion of the molten magma.

Theorists believe that the thermal energy required for convective movement within the mantle, and the melting of the viscous material, is caused by the disintegration of small amounts of the radioactive elements of uranium, thorium and potassium contained within the earth surfaces. In other words, complex and terrifying energies of molten rock generate steam that expands, and under tremendous pressure, bursts through the surface crust, forming volcanic cones and spewing out, so to speak, our most fertile soils.

Few realize that if the theorists are correct (and they do make sense), our earth is one huge soil-forming, atomic-steam powerplant and that a volcano is in reality the steam explosion of an atomic energy system.

The silicate formed by the partial atomic-steam explosion end then thrown off by active volcanoes gives rise in atmosphere, where it is cooled, to a form of rock called basalt.

A moving plate curves down beneath a crust plate where friction, added to the atomic pump, feeds the melt. This energy cracks the earth under pressure and carries the liquid basalt rock upward where dust and rock forms the cone and the folds round the cone.

Of course this is a simplified description of the whole process which in detail is complex beyond all imagination. It has, however, been researched by numerous geologists over the years since the German meteorologists. Alfred Wegener, in a book titled The Origins of Continents and Oceans (1915), came upwith what is now known as the tectonic theory of land (continent.) formation. He was, of course, ridiculed in his own day.

Bread from Stones has been republished in English by Acres U.S.A. It is available for S10.00 (plus $1.00 postageend handling U.S.; $2.00 foreign).

BEAMS

The ELF growth pattern force of energy focused into the ground by the paramagnetic soil, round towers, or rock can be easily plotted by planting radish seeds around the rock, round tower, or in veil mixed with ground up rock.

In this red sandstone tower example it will be noted tower is oriented with the door facing 95- toward the rising sun in mid-September in Gainesville, Florida. In such a system, the least energy is to the east resulting in slow growth end small plant size and the greatest energy is to the west producing fast growth end large plant size . Side growth is intermediate. Such a plot based on plant size end root-dirt weigh tat an eight day harvest, is very similar to plots of energy from my World War II radio range station in Belleek.

The largest root growth, with the most fine rootlets, is at top left to the west of the round tower. The smallest is at 95_east at the lower right of the photo. The north growth at the top right is slightly smaller than the south growth at bottom left.

Note from compass that the strongest growth is to the east at 95_, in contrast to tower and tomb plantings. The higher growth rate and root complex is always off the sharp corner of such highly paramagnetic rocks. I first noticed this growth effect while climbing cliffs and searching rock canyons for eagle and falcon nests as a youth.

Note energy is weak at front entrance and strong along the sides end rear. This model is of a Vermont megalithic

stone structure. Constructed of diamagnetic wood interior and paramagnetic pink granite exterior.

It appears that most healing/religious structures such as gothic cathedrals, round towers, and megalithic tombs are facing east so that the weak energy is at the entrance and the strong energy is at the back where the altar of hearing chamber is located. There is also stronger energy at the sides, where the arms of the tomb cross the main tuinnel as seen in gothic cathedrals.

PICRAM, Photonic Ionic Cloth Radio Amplifier Maser, is my name for the patent (No. 5,247,933) I obtained for my ELF (extremely low frequency) antenne detector. As you censee from the bottom photo, it is mounted directly on the Tekmeter oscilloscope input with no leed. On the 5 mV range, it accurately measures ELF atmospheric waves generated bylightning which are detectable even underground in soil. These waves stimulate plant root growth.

The PICRAM is constructed by soaking wool-linen clothor burlap in seawater. In the top photograph, the cloth is connected to a simple banana plug at the corner end wrappedaround the plastic of the plug where it is held in place by tworubber bands.

Harry Kornburg, my patent co-author, translated the Hebrew which describes such a piece of cloth worn by the Jewish High Priest. It enhanced his immune system in order that he could safely examine lepers like those sent to him by Christ. The bible is by far the best science book for low energy systems ever written. The Hebrew name for my PICRAM ELF detector is Shatnez. It was worn as a long ribbon strap wrapped around the high priest's body.

GLOSSARY to the book 'Paramagnetism' by Phil Callahan

Amplitude -- Strength of an electromagnetic wave, usually shows as the height of the wave on an oscilloscope.

Antenna -- A metal or dielectric (insulative) substance fromwhich electromagnetic waves (photons) are transmitted orreceived.

Aperture -- The cross-beam diameter of a focused beam oflight or other photon energy; also the effective diameter of alens or mirror.

C.G.S.-- Centimeter/grams/second_the measurement ofthe magnetic flux density (gauss), see text for explanation.

Coherent (radiation) -- Electromagnetic radiation in which two or more waves travel in unison which peaks and troughs together

Clast -- A fragment in sedimentary rock.

Cleavage -- The breaking of some minerale long one or moreregular directions.

Diamamagnetic -- Magnetization in the opposite direction to the applied field, e.g., away from a magnet. All plant life is diamagnetic.
1 12 Paramagnetism

Dielectric -- A nonconductor of electric charges that undercertain conditions can be a semiconductor, insulative substance.

Dike -- An intrusive thick vertical sheet of igneous rock which cuts across other types of rock.

Doping -- mixing a minute amount of one substance into a large volume of liquid, gas or solid.

ELF-VLF -- Extremely low frequency (radio) from 1 Hz to 10,000 Hz for ELF, end 10,000 Hz to the broadcast band for VLF. See the definition of spectrum in author's Exploring the
Spectrum.

Erosion -- The disintegration of rock due to wind, water, or soil, or the movement of the soil.

Fault -- A fracture of the earth's crust.

Fiberization -- the ability of the roots of weeds to penetrate compacted veil with the aid of secreted chemicals.

Field_A region in which a body experiences a force as the results of the presence of some other body or bodies.

Fold -- The plastic deformation of rock strata.

Form -- Shape of a mineral or rock.

Fracture -- Random way which minerale break.

Gauss -- The CGS unit of magnetic flux density. See CGS.

Geode -- A rock concentration, rounded end often hollowwhich contains crystals.

Harmonic -- An oscillation having a frequency that is a simple multiple of a fundamental oscillation.

Hertz -- The unit of frequency equal to one cycle per second.Symbol Hz.

Igneous rock -- Rocks formed when volcanic magma solidifies, for example, basalt.

Incoherent -- Frequency (cycles) that are out of step, nonresonant.

Karni -- Japanese term for the spirit of an object, rock tree,etc.

Lava -- Molten rock reaching the earth's surface where it rapidly cools. Fine grained.

Magma -- Molten rock beneath the surface of the earth.

Magnet -- A piece of magnetic material, e.g. iron, nickel or cobalt, that has been magnetized end is therefore surrounded by a magnetic field.

Mantle -- Zone between the earth's crust end iron-nickel core.

Metamorphic rock -- Rock that has been altered from itsoriginal form by heat end pressure at great depths.

Oolite -- Spherical grains of calcite that build into limestone.

Paramagnetism -- The atoms or molecules of a substance that have a net orbital or spin magnetic moment end are capable of being aligned in the direction of the applied field.

Photonic -- Pertaining to photons. A photon may be regarded as a unit of radiation (light) energy. It is a mathematical concept

Radio Wave -- A wave for transmitting information in which the medium is long wave electromagnetic energy (above ELFVLF region).

Schist -- Type of metamorphic rock with layerings of mica.

Schuman Waves -- Long wave extremely low frequency (ELF) radio waves in the 8, 14, 21, 27 end 3 3 Hz region. They are generated by lighting in the atmosphere.

Sedimentary rock -- Rocks formed by the accumulation of sediments from weathering end erosion.

Sensilla -- The minute spines on insects of many diverse shapes that resonate to infrared frequencies from oscillating molecules.

Sill -- A horizontal sheet of intrusive rock injected between layers of sedimentary or metamorphic rock.

Susceptibility -- A magnetic term for the ability of a substance, e.g. rock, to receive end transmit magnetic fields from the cosmos.

Vein -- A more or less upright deposit of mineral that cut through other rock.

Volcano -- A vent in the earth's crust through which magma gasses, and volcanic ash are ejected.

Waveguide -- A substance that guides radiation, e.g. light, radio, etc., along its axis with very little energy loss.

Yang -- The male (+) force in Chinese lore.

Yin -- The female (-) force in Chinese lore

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http://www.nutri-tech.com.au/downloads/product_information_sheets/Energy%20Devices/PCSM%20-%20Phil%20Callahan%20Soil%20Meter.pdf
http://www.nutri-tech.com.au/products/energy-devices/pcsm.html

PCSM - Phil Callahan Soil Meter™

Professor Phil Callahan has suggested that paramagnetism represents "Light from Rocks to the Roots". His PCSM has effectively lifted an abstract concept into the realms of hard science.

The revolutionary new PCSM Meter (Paramagnetic Count Soil Meter or Phil Callahan Soil Meter) offers a new dimension in fertility monitoring. Developed by Dr Phil Callahan, the meter accurately measures the paramagnetism of soil and other materials. Paramagnetism has been termed "The Missing Link" in high production agriculture.

Benefits

* The PCSM can be used as a general fertility monitor - the higher the fertility the higher the CGS reading.
* The PCSM can be used to identify paramagnetic inputs for fertility building.
* This tool can often be used as a problem-solver when soil tests don't explain poor crop performance.
* The tool can be used to monitor the progress of nutrition programs.
* Note: A well-balanced, fertile soil will contain good levels of oxygen.
* Oxygen is a highly paramagnetic gas.

Solid-state organic maser
US2002125419

A solid-state, paramagnetic-diamagnetic maser for controlling the amplification and direction of electromagnetic emissions from a molecular control system, such as insect pheromones. The solid-state maser includes a paramagnetic layer of, for example, a mixture of andosite, basalt and granite. The paramagnetic layer is disposed onto a diamagnetic base. A burlap or hairy cloth impregnated with the molecular control system is placed over the paramagnetic layer, such that the paramagnetic energy amplifies the molecular control system to produce coherent or semi-coherent electromagnetic emissions. The molecular control system can be a semiochemical (such as, insect pheromones), garlic scent, perfume, deodorant, air freshener, similar molecules, infrared coded emissions from any system that controls or effects living organisms, and the like. The solid-state maser of the present invention is an organic and biodegradable device that is tuned and modulated by existing and naturally occurring atomospheric frequencies. Moreover the device provides a highly efficient and effective solution for pest control and improving plant growth, without having to exterminate the pests or distribute chemicals that may harm the environment or increase health risks for humans.

BACKGROUND OF THE INVENTION

[0004] 1. Field of the Invention

[0005] The present invention is directed to a device for producing maser-like emissions and a method of fabrication. More particularly, the present invention relates to the stimulation of maser-like emissions from scents or other molecular control systems.

[0006] 1.Background Art

[0007] Recent years have imposed major challenges on efforts to juxtapose effective pest control with sustaining the delicate balance between humans and nature. Mites, ticks, mosquitos, flies, other insects, worms, rodents and similar pests are firmly integrated into the Earth's ecosystem. They interact with the environment, and thus humans, as they search for food and shelter. Insects, for example, may be attracted to a number of naturally occurring phenomena, such as carbon dioxide resident in a person's breath, the makeup of a person's perspiration or the surface of the person's skin or hair, the fabric or color of clothing, scents emitting from personal cleansing products, lotions, and perfumes, and the like. As a result of an insect's attraction to these elements, people are naturally annoyed by pests during the course of a typical day. Additionally, insects and other pests frequently infect homes, schools, other buildings, gardens and farms as they continue their quests for food and shelter.

[0008] To mitigate the harmful effects and nuisance of such animals, various types of chemicals have been engineered to repel or kill them. These chemicals include insecticides and other pesticides to directly control the animals, herbicides or weed killers to destroy their habitats, and fungicides to control mold or mildew. Unfortunately, not only do these chemicals harm or kill animals who perform an integral role in the Earth's ecosystem, but these deadly poisons and hazardous chemicals also reap harm on the environment in general. Pesticides used on farms, for instance, contaminate the fields as well as underground water supplies. Moreover, pesticides represent leading contributors to air and water pollution, and in many cases, infect and poison the food that they are intended to protect from insects.

[0009] The dangers of pesticides, herbicides, fungicides, fertilizers and similar hazardous chemicals are well documented. By contaminating the environment or the food they are intended to protect, these chemicals can contribute to the development of a variety of human physiological illnesses. Prolonged exposure to pesticides has been known to manifest nasal congestion, headaches, a dry throat, respiratory infections, skin reactions, nervous system damage, endocrine disorders, increased sensitivity to other chemicals, and cancer.

[0010] In fact, scientists contend that some of the chemical compounds used in pesticides cause irreversible harm to human brain cells or neurons. A recent scientific study has revealed that individuals exposed to pesticides in the home or garden are 70% more likely to develop Parkinson's Disease than those who are not exposed. See "Pesticide exposure linked to Parkinson's disease," Chubb Lucy. (Environmental News Network Inc., May 2000). Because of their smaller bodies and developing nervous and respiratory systems, children are even more vulnerable to the harmful effects of pesticides than adults. Yet, schools are commonly sprayed with herbicides and pesticides to control the likes of yellow jackets, ants, weeds, fleas, mosquitoes, flies, cockroaches, ants, wasps, mold, mildew, bacteria and rodents.

[0011] For example, organophosphates embody a commonly used class of pesticides. This chemical has been discovered to contribute to heart problems. Another commonly used substance around schools includes chlorpyifos that can fatally damage a child's nervous-system if inhaled in large doses. Another example is synthetic pyrethroids which include cypermethrin, a possible carcinogen. Diazinon, which is typically used on lawns, can cause nausea, dizziness, headaches and aching joints, and in large doses, can damage a child's nervous system. Other illness attributed to pesticides include childhood leukemia, soft-tissue sarcomas, brain cancers, asthma and other respiratory problems. See "Children face danger in the schoolyard grass from pesticides," Daniella Brower. (Cable News Network, March 2000). In short, these deadly chemicals destroy the nervous systems of not only pests but humans as well. Hence, the extended use of pesticides creates a significant risk to public health.

[0012] As an alternative to chemical-based solutions, some scientists have revisited the laws of physics to use natural observations and experimentation to find healthier pest control methods. Through scientific observations, the inventors have discovered that insect spines, for example, are indeed real antenna that have properties comparable to dielectric antenna (e.g., plastic or polymeric substance). The inventors' research reveals that an

insect's antennae functions similarly to a ten centimeter (cm) shortwave radar that can be used to smell the exhaust of electronics. In other words, an insect's antennae receives and processes electromagnetic radiation vibrating at a natural frequency signature.

[0013] Thus, by designing an apparatus capable of transmitting electromagnetic radiation within a desired frequency range, one can attract or repel insects and other pests. This concept is explored in commonly assigned U.S. Pat. No. 5,424,551 to Callahan, issued Jun. 13, 1995, and entitled "Frequency Emitter for Control of Insects" (hereinafter referred to as "the '551 patent"), and commonly assigned U.S. Pat. No. 5,528,049, issued Jun. 18, 1996, and entitled "Frequency Emitter for Control of Insects" (hereinafter referred to as "the '049 patent"). The disclosure of the '551 patent and the '049 patent is incorporated herein by reference as though set forth in its entirety.

[0014] The system described in the '551 patent utilizes natural or copied scatter surfaces, dielectric spine forms (representing, for example, an insect's sensilla), correct pumping radiations, and correct vibratory modulating frequency to generate coherent or semi-coherent frequencies to control or attract insects. The coherent or semi-coherent frequencies can act as either attractant radiation (e.g., trapping) or frequency quenching radiation (e.g., jamming). Similarly, the system of the '049 patent uses pumping radiation and either molecular vibratory modulation or a scatter surface to generate coherent or semi-coherent radiation frequencies to control or attract insects.

[0015] The inventors' research shows that the systems of the '551 patent or '049 patent work very well over short distances, but experiences power loss and becomes less efficient over larger ranges. Experiments by the inventors reveal that the trap of the '551 patent attracted moths over a four inch distance. This device functions as a flowing model that works very well over very short distances, but is inefficient because of power loss between the elements. The spacing between the components of the device are far apart, so a considerable amount of power is lost from component to component.

[0016] Consequently, a system and method are needed to solve the above-identified problems and provide an efficient solution for controlling insects and other pests in a manner that reduces pollution and medical risks.

BRIEF SUMMARY OF THE INVENTION

[0017] The system and method of present invention overcome the problems of inefficient gaseous, pest control systems with minimum output by providing a paramagnetic-diamagnetic system as an efficient solid-state maser system that works over long distances. Moreover, the maser system is capable of controlling the amplification and direction of electromagnetic emissions from any molecular control system, such as a semiochemical (e.g., insect pheromones), garlic scent, perfume, deodorant, air freshener, similar molecules, infrared coded emissions from any system that controls or effects living organisms (such as, drugs, pharmaceuticals, etc.), and the like.

[0018] In an embodiment of the present invention, the maser system includes a layer of paramagnetic material. The paramagnetic layer can include any combination of andosite, basalt, granite, polyester film and other paramagnetic materials having a level of paramagnetism ranging from 1 to 14,000 centimeter-gram-seconds (cgs).

[0019] The paramagnetic layer is typically deposited onto a diamagnetic base that provides a housing or structural support for the maser system. The diamagnetic base can be composed of quartz, wood, plant fibers, leather, plastic, and other diamagnetic materials having a level of diamagnetism ranging from -1 to -4,000 cgs.

[0020] In an embodiment, a burlap or hairy cloth is soaked or impregnated with the molecular control system, and placed over the paramagnetic layer. The paramagnetic energy amplifies the molecular control system to produce coherent or semi-coherent electromagnetic emissions at a desired frequency, phase and direction.

[0021] In an embodiment, the electromagnetic emissions are modulated or tuned to the surrounding environment. The Callahan frequencies are used to modulate the solid-state maser system. The size of the maser system can also be adjusted to tune the maser system to match the resonant, paramagnetic atmospheric frequencies.

[0022] A feature of the present invention is that it provides an organic and biodegradable device for pest control. Furthermore, the device is designed to be tuned and modulated by existing and naturally occurring atmospheric frequencies.

[0023] An advantage of the present invention is that it provides a highly efficient and effective solution for maintaining pest populations below desired threshold levels and protecting food supplies without killing the animals, depleting the ozone layer or endangering the health of children and adults, alike.

BRIEF DESCRIPTION OF THE DRAWINGS/FIGURES

[0024] The accompanying drawings, which are incorporated herein and form part of the specification, illustrate the present invention and, together with the description, further serve to explain the principles of the invention and to enable a person skilled in the pertinent art to make and use the invention. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the leftmost digit(s) of a reference number identifies the drawing in which the reference number first appears.

[0025] FIG. 1A illustrates a cross-sectional view, taken along a line 1-1 of FIG. 1B, of an paramagnetic-diamagnetic maser according to an embodiment of the present invention.

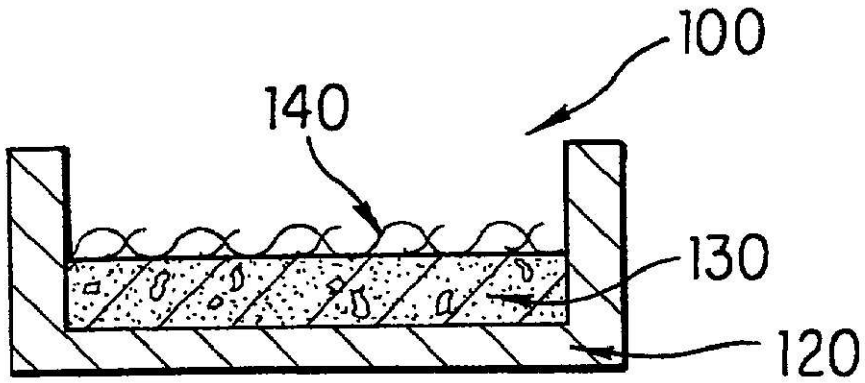

FIG. 1A

[0026] FIG. 1B illustrates a perspective view of the paramagnetic-diamagnetic maser of FIG. 1A.

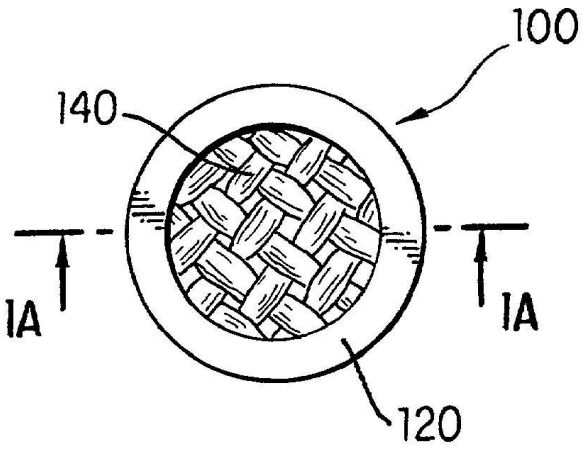

FIG. 1B

[0027] FIG. 2 illustrates a flat plate configuration of a paramagnetic-diamagnetic maser according to an

embodiment of the present invention.

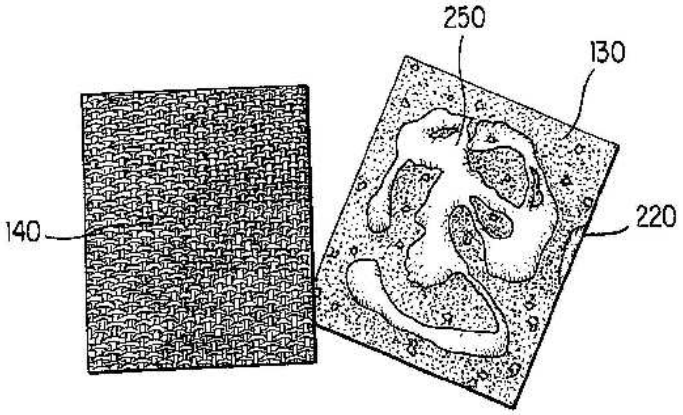

FIG. 2

[0028] FIG. 3 illustrates a loop configuration of a paramagnetic-diamagnetic maser according to an embodiment of the present invention.

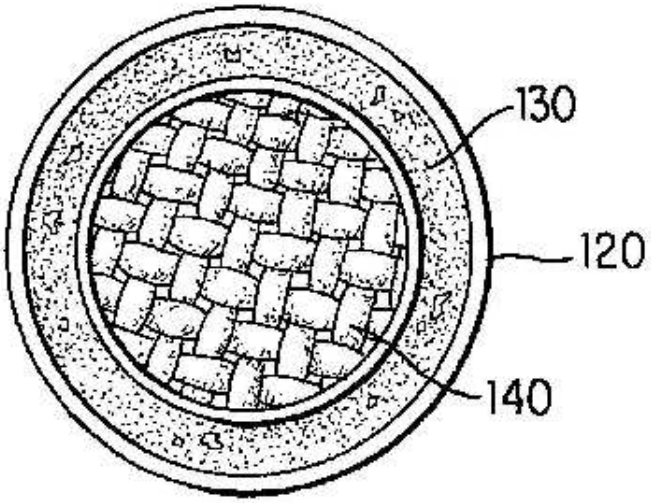

FIG. 3

[0029] FIG. 4 illustrates a loop configuration of a paramagnetic-diamagnetic maser according to another embodiment of the present invention.

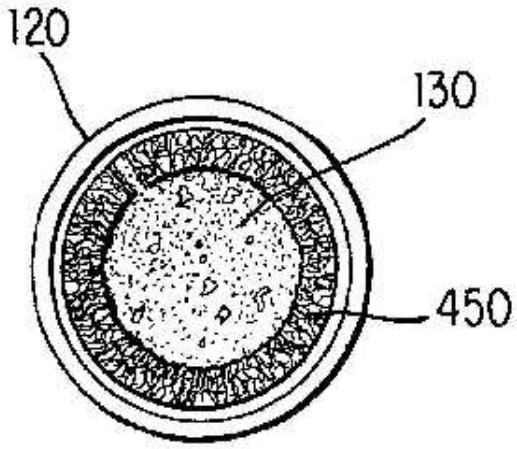

FIG. 4

[0030] FIG. 5 illustrates a rod configuration of a paramagnetic-diamagnetic maser according to an embodiment of the present invention.

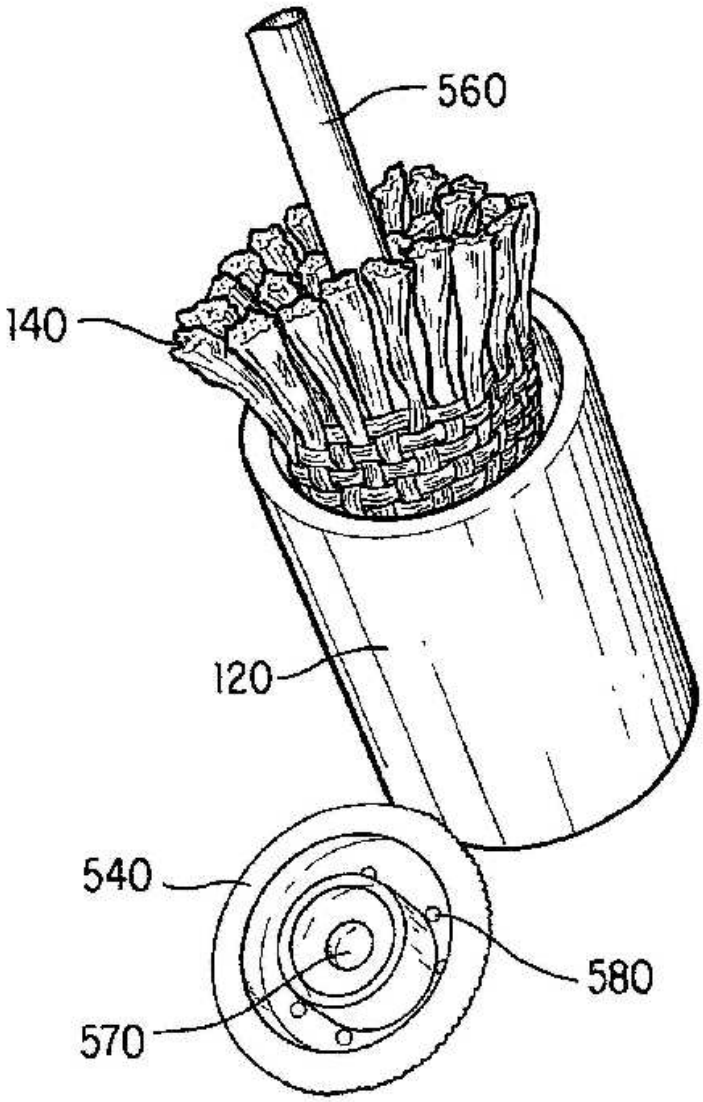

FIG. 5

DETAILED DESCRIPTION OF THE INVENTION

Table of Contents

[0035] I. Overview

[0036] Throughout history, farmers have been known to distribute ground-up paramagnetic rock in their fields to revitalize the soil and stimulate plant or crop growth. Paramagnetic rock generally directs and amplifies organic energy in a single direction. The organic energy actually converges like a beam as it passes through a medium, such as the ground or air. Hence, this paramagnetic force functions as a magnetic modulator and stimulant for plant growth and increased agricultural output. As will be demonstrated below, the present invention is a

paramagnetic-diamagnetic system that can be used to grow plants, as well as provide an organic, biodegradable solution for pest control without polluting the environment or increasing medical risks, and the like.

[0037] The paramagnetic-diamagnetic system of the present invention is a solid-state maser that is configurable to control the amplification and direction of electromagnetic waves over a wide band of frequencies, primarily in the radio, microwave and infrared spectrum, but including all regions of the frequency spectrum. More specifically, the system of the present invention controls the amplification and direction of electromagnetic radiation that is emitted from a molecular control system, such as a semiochemical, garlic scent, perfume, deodorant, air freshener, similar molecules, infrared coded emissions from any system that controls or effects living organisms (such as, drugs, pharmaceuticals, etc.), and the like. A semiochemical includes any secretory substance, such as insects pheromones, that regulates behavior in members of the same species.

[0038] A molecular control system (also referred to herein as "the control molecule") contains ions whose energy levels can be shifted by a magnetic field. According to the present invention, the magnetic field is supplied by a paramagnetic force. In response to the application of the paramagnetic force, the molecular control system, in essence, can be modulated to amplify a desired frequency. This is accomplished by using a paramagnetic photon to induce the excited atom or molecule to shift energy states and, thereby, emit a photon of the same frequency as the paramagnetic photon. The emitted photon would also travel in the same direction and in phase with the paramagnetic photon. The amplitudes of the waves produced by the emitted and paramagnetic photons are aggregated to produce the amplification.

[0039] II. System Architecture

[0040] FIG. 1A and FIG. 1B illustrate a paramagnetic-diamagnetic maser 100 according to an embodiment of the present invention. As shown, FIG. 1B illustrates a top-down view of maser 100 and FIG. 1A illustrates a cross-sectional view taken along line 1-1 of FIG. 1B. Maser 100 is a central, conical radar dish type configuration that is tuned to the atmosphere. The components of maser 100 includes a diamagnetic base 120, paramagnetic layer 130 and cloth 140.

[0041] Diamagnetic base 120 provides a housing or structural support for the other components of maser 100. In an embodiment, diamagnetic base 120 is composed of quartz (e.g., sand). However, diamagnetic base 120 can be any type of diamagnetic material that is weakly repelled by the application of an external magnetic field. Such material includes, but is not limited to, wood, plant fibers, leather, plastic, and the like. In a preferred embodiment, the diamagnetism of diamagnetic base 120 ranges from -1 to -4,000 centimeter-gram-seconds (cgs). A tree, for example, typically averages -300 cgs. Most naturally occurring diamagnetic materials approximates -3,000 cgs.

[0042] Paramagnetic layer 130 is deposed over diamagnetic base 120. In an embodiment, paramagnetic layer 130 is a mixture of paramagnetic rock, including andosite, basalt, granite, and the like. In another embodiment, paramagnetic layer 130 is magnetic tape, which is generally a polyester film (such as, a Mylar(R) film available from DuPont) that is coated with a thin layer of plastic containing tiny permanent magnets. Paramagnetic layer 130 can include other types of paramagnetic material that are weakly pulled towards an applied external magnetic field.

[0043] In an embodiment, an adhesive composition is mixed with the paramagnetic material to produce paramagnetic layer 130. The adhesive composition can be any combination of materials that manifest the creation of a plastic-like insulation between paramagnetic layer 130 and diamagnetic base 120. The adhesive composition can include a combination of water and alcohol, but should not include solvents, such as, gasoline, methylene, ethylene, propylene and the like.

[0044] In an preferred embodiment, the dielectric constant for paramagnetic layer 130 ranges from 2.23 to 3.39 at 1,000 Hz. The dielectric constant is the ratio of the susceptibility or propensity for paramagnetic layer 130 to be magnetized in an external field to the susceptibility of a vacuum or free space. However, the dielectric constant can be approximated as the square of the refractive index of paramagnetic layer 130 (e.g., 1.5<2>). In a preferred embodiment, the paramagnetism ranges from 1 to 14,000 cgs. At levels exceeding 14,000 cgs, system performance starts to degrade. In an embodiment, ten cm of magnetic tape having ten cgs of paramagnetism works effectively.

[0045] Maser 100 also includes cloth 140, which is a burlap, hairy or other cloth soaked in the desired control molecule. Cloth 140 is preferably, but not necessarily, a photonic ionic cloth radio amplifier (PICRA) as described

in commonly assigned U.S. Pat. No. 5,247,933, issued Sep. 28, 1993 to Philip S. Callahan and Harry Kornberg, and entitled "Photonic Ionic Cloth Radio Amplifier" (hereinafter referred to as "the '933 patent"). The disclosure of the '933 patent is incorporated herein by reference as though set forth in its entirety. As described in the '933 patent, PICRA is a burlap or other unbleached hairy cloth that directs molecules from the burlap threads into the atmosphere (or free space). As described in the '933 patent, the conductivity of cloth 140 can be increased by soaking cloth 140 in a saline solution for approximately one to six hours and then air dried until it is slightly damp. The saline solution preferably consists of an isotonic aqueous solution containing a borate buffer system and sodium chloride, preserved with 0.1% of sorbic acid and disodium (e.g., EDTA). Alternatively, four tablespoons of sea salt per half pint of water with the same borate buffer described above can be used. However if cloth 140 is very damp or completely dry, cloth 140 may not be as conductive. Nonetheless for the present invention, cloth 140 is not required to be conductive since maser 100 is not operated by a battery or electrical power source, and thus, cloth 140 can be completely dry.

[0046] Similarly, saline or sea water can be used to make paramagnetic layer 130 more conductive, but, once again, it is not required since the maser 100 does not require a battery or electrical power source. Nonetheless, the strength and longevity of a signal emitted from maser 100 can be increased by dampening cloth 140, paramagnetic layer 130, or both with water.

[0047] The control molecule is impregnated or soaked into the fibers of cloth 140. Alternatively, the control molecule can be placed into the paramagnetic-adhesive mixture of paramagnetic layer 130. Irrespectively, cloth 140 is disposed over paramagnetic layer 130 as shown in FIG. 1A. In a preferred embodiment, cloth 140 (impregnated with the control molecule) and paramagnetic layer 130 are both allowed to harden for at least twenty-four hours, prior to positioning cloth 140 over paramagnetic layer 130. An adhesive composition can be used to ensure that cloth 140 adheres to paramagnetic layer 130.

[0048] In an embodiment, electromagnetic emissions from maser 100 are varied or modulated by the 156.26 or 506.81 Hz atmospheric scatter frequencies (also referred to as the Callahan frequencies). These electromagnetic waves (i.e., the Callahan frequencies) are Cannabas scatter waves of the atmosphere and can be found, all over the world, penetrating both atmosphere and earth with little or no absorption. The Cannabas scatter waves are spaced by 156.26 Hz. However, 506.8 Hz has been determined by the inventors to be a natural harmonic of the 156.26 scatter frequency. Other harmonic frequencies of 156.26 can also be used. Thus, the emissions from maser 100 can be naturally modulated because the Callahan frequencies exists freely in nature.

[0049] In an embodiment, the electromagnetic emissions from maser 100 are tuned by applying or loading 3.2 cm or 10 cm high atmospheric, or cosmic, frequencies to the system. The 3.2 cm high waves are also found all over the world. They reflect from the ground, including sand or rock, and can be directed or amplified like a laser. The surrounding atmosphere is typically composed of oxygen which tends to be paramagnetic and self-modulating. One can easily observe that an oxygen-based atmosphere alters the frequency of visible electromagnetic radiation to produce a scattering or twinkling effect. This phenomenon can be evidenced by observing the twinkling of lights and distance stars. Thus, to improve the performance of maser 100, the electromagnetic waves radiating from maser 100 must be tuned to match the paramagnetic frequency of the surrounding atmosphere to reduce scatter or the twinkling effect. The resonant, paramagnetic frequency for oxygen is 3.2 cm high. Therefore, maser 100 is tuned to the atmosphere (i.e., 3.2 cm resonant air (i.e., oxygen) atmospheric region).

[0050] In an embodiment, maser 100 ranges between 1 to 6, preferably 1 to 2, wavelengths in diameter. This range enables maser 100 to match its emissions to the antenna emissions of the insect to be controlled. The inventors have discovered that a half or quarter wavelength in diameter is not sufficient for matching the insect's antennae. As well-known, the amplitude of a signal can be measured by the equation A=D/[lambda]0, where D represents the diameter of the signal emitter and [lambda]0 is the free space wavelength. In a preferred embodiment, the amplitude of the signal from maser 100 should be 1 or 2 wavelengths. In other words, for a loading frequency of 3.2 cm in an oxygen-based atmosphere, the diameter of diamagnetic base 120 should be 3.2 cm for 1 wavelength (i.e., A=3.2/3.2) or 6.4 cm for 2 wavelengths.(i.e., A=6.4/3.2). Thus, the dimensions of maser 100, namely diamagnetic base 120, must be adjusted according to the resonant, atmospheric frequency (i.e., oxygen).

[0051] FIG. 2 illustrates flat plate type configuration of maser 100 according to an embodiment of the present invention. In this embodiment, diamagnetic base 220 is a flat surface formed in the shape of a polygon, as shown, or any other geometric shape. Diamagnetic base 220 provides structural support for paramagnetic layer 130. Cloth 140 is soaked in the control molecule and positioned over paramagnetic layer 130. An adhesive 250 can be applied

to seal diamagnetic base 220 to paramagnetic layer 130. However, adhesive 250 is optional. Adhesive 250 can be any adhesive composition, as discussed in reference to FIG. 1A.

[0052] FIG. 3 illustrates a loop configuration similar to the embodiment shown in FIG. 1A. However, in this embodiment, cloth 140 is positioned in the center of diamagnetic base 120, and disposed directly onto diamagnetic base 120. Paramagnetic layer 130 surrounds cloth 140. An adhesive composition can be used to secure cloth 140 and paramagnetic layer 130 to diamagnetic base 120, but it is not required. As shown, a portion of diamagnetic base 120 forms a divider to separate paramagnetic layer 130 from cloth 140. However, the divider is optional.

[0053] In one embodiment, diamagnetic base 120 of FIG. 3 is red and, in a second embodiment, diamagnetic base 120 is blue. The inventors have discovered that a blue pumping color tends to attracts more insects. However, ants have a propensity to be more attractive to a red pumping color. Therefore, the color of maser 100, namely diamagnetic base 120, provides pumping radiation that improves the effectiveness of maser 100 to attract insects.

[0054] FIG. 4 illustrates another configuration of maser 100 that does not include cloth 140. In this embodiment, paramagnetic layer 130 is impregnated with the control molecule. Diamagnetic base 120 supports paramagnetic layer 130, but along the side wall of diamagnetic base 120 is a layer of dielectric spines 450, such as a spined plastic, velcro, and the like. Dielectric spines 450, thus, surround paramagnetic layer 130, and can be secured to diamagnetic base 120 by using an adhesive composition or other conventional methodologies for attaching components (including, but not limited to, brazing, soldering, welding, and the like) as would be apparent to one skilled in the relevant art(s). Alternatively, dielectric spines 450 need not be secured to diamagnetic base 120.

[0055] In this embodiment, photons of energy radiate from the control molecules or paramagnetic layer 130, and flow across dielectric spines 450. Spine collisions are formed by the spaces between the individual spines of dielectric spines 450 and the aligned control molecules. As the photons flow across the individual spines and through the spine collisions, the spine output (i.e., amount of radiation amplified by dielectric spines 450) is increased.

[0056] FIG. 5 illustrates an elongated rod configuration of maser 100 according to an embodiment of the present invention. In this embodiment, diamagnetic base 120 has a cylindrical shape. Cloth 140 lines the inner surfaces of diamagnetic base 120, and is soaked with the control molecule. Cloth 140 wraps around the base of a diamagnetic tube 560 that protrudes from the center of maser 100. In an embodiment, diamagnetic tube 560 is a plastic material. Diamagnetic tube 560 is filled with a paramagnetic material (not shown) similar to paramagnetic layer 130 described in reference to FIG. 1A. Also included is a lid 540 that fits over cloth 140 and can be fastened to diamagnetic base 120. A plurality of vent holes 580 are drilled into lid 540. Diamagnetic tube 560 extends through a tiny opening 570 in the center of lid 540.

[0057] The control molecules (e.g., scent) flows out of diamagnetic lid 540 along the paramagnetic material-filled diamagnetic tube 560 where the electromagnetic waves from the control molecules are trapped and highly amplified. The inventors have discovered that diamagnetic tube 560 functions as an antenna that continues to emit frequencies even after all of the control molecules (e.g., scent) have been dispersed. This is attributed to the monolayer of oriented molecules fixed on diamagnetic tube 560. When maser 100 is amplifying the signal from a scent molecule, the embodiment shown in FIG. 5 appears to be better suited for flying insects as opposed to ants or cockroaches. To attract mosquitoes, maser 100 should use a larger, black diamagnetic tube 560 filled with mosquito attractant and rock. The system should be modulated at a flickering rate (ELF) of 78.15 Hz harmonic and 156.26 Hz to attract the mosquito. It should be noted that 78.15 Hz is an echo or harmonic of the 156.26 Hz Callahan frequency.

[0058] III. Paramagnetic-Diamagnetic Maser Performance

[0059] As known to those skilled in the relevant art(s) when electronic components are closer together, zero aperture will occur. In a conventional radar system, zero aperture reduces the spreading of the radar beam so that, at the point of emission, the path length is shortened and produces phase conjugation. Thus, the system would be able to achieve almost complete spatial coherence.

[0060] As illustrated, maser 100 provides a solid-state system. In comparison with the system of the '551 patent or the '049 patent, the solid-state design of the present invention creates zero antenna aperture. The phase conjugation provided by this design improves performance, and increases power because the components are closer together

and generate minimal loss or scatter. In other words, there is no spread of the maser beam, so that at the point of emission (i.e., zero aperture), the path length is so short (i.e., no spread) that phase conjugation, and complete spatial coherence can be achieved.

[0061] The system of the '551 patent uses paramagnetic (e.g., oxygen), diamagnetic (e.g., nitrogen) and contained scent in the form of a gas (e.g., atmosphere). The solid-state system of the present invention incorporates all the physical parameters of the gaseous system of the '551 patent, except, as in the case of any solid-state system, the paramagnetic-diamagnetic modulation is by a solid-state material (e.g., rock) which is substituted for the gas flowing air mixture. This allows a hairy cloth (e.g., simulating, for example, insect sensilla), or red-colored pumping radiation, to be incorporated directly into the paramagnetic-diamagnetic system without the necessity of flowing it. It also allows a reduction in size and form so that the three cm antenna dimensions can be matched to the three cm resonance of the surrounding air (e.g., oxygen). Therefore, unlike the system of the '551 patent, the system of the present invention is an efficient, solid-state maser system capable of working over longer distances.

[0062] It is possible that the desired frequency is not the only frequency emitted from maser 100. However, the emission of other frequencies is irrelevant to the effectiveness of the present invention. Nor is it relevant whether a few molecules (e.g., insect pheromones) can defuse through air spaces within diamagnetic base 120. In fact, if a few molecules escape through diamagnetic base 120, maser 100 functions as a more efficient device for, for example, attracting or repelling insects, because not only does maser 100 emit the desired frequency, but the escaped semiochemicals also produce emissions to lure or repel the insect in the general area. It is the inventors' belief that moths, and insects in general, are attracted or repelled by the electromagnetic radiation from pheromones, and not necessarily the pheromones, themselves. Therefore, the device of the present invention is primarily a frequency emitter that functions like a radar. With respect to pest control, the device of the present invention is configurable to increase the strength and longevity of a molecular control system (e.g., semiochemical and the like) that can be used to attract or repel the target pest.

[0063] Accordingly, the system and method of the present invention provide a highly efficient and effective solution for maintaining pest populations below desired threshold levels and protecting food supplies, without the use of hazardous pesticides. Moreover since the present invention promotes an cleaner technological alternative to pesticides, pests can be controlled without having to exterminate the animals, utilize ozone depleting or other environmentally harmful chemicals, or utilize pesticides that may endanger the health of children and adults, alike.

[0064] IV. Conclusion

[0065] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example, and not limitation. It will be apparent to persons skilled in the relevant art(s) that various changes in form and detail can be made therein without departing from the spirit and scope of the invention. Thus, the present invention should not be limited by any of the above described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

A FREQUENCY EMITTER FOR CONTROL OF INSECTS WO9628749

An apparatus (5) and method for controlling insects utilizes a light pump (60) and vibrator motor (40) to generate coherent or semi-coherent radiation frequencies to control or attract the insects. The light pump (60) and a scatter surface (20) generate the coherent or the semi-coherent radiation frequencies to control or attract the insects.

Background of the Invention

Field of the Invention

The present invention relates generally to an apparatus and method for controlling or attracting insects and, more particularly, to an apparatus and method for providing a scatter surface and pumping radiation to generate coherent or semi-coherent radiation frequencies to control or attract insects.

Discussion of Related Art

Insects such as fleas, mosquitos, moths, etc. are undesirable because they are bothersome, destroy property, and often pose health risks. Devices and methods for trapping, killing, and disposing of insects are well known in the art. These devices and methods have taken many forms and include, for example, fly paper, electric insect killers that kill by electrocution, and chemical pesticides. Conventional devices and methods have many shortcomings. For example, fly paper and electric insect killers are both ineffective at attracting insects, and as such, are only marginally effective (approximately 5-10%) for eliminating insects within a given area. Chemical pesticides are dangerous to both the human population and the environment as a whole. Further, chemical pesticides are also ineffective at attracting insects.

It has long been known that insects are attracted to specific molecules of sex and host plant attractants. For example, Dr. Philip S. Callahan (hereinafter
Applicant) demonstrated conclusively in 1957 that night flying moths are not attracted to visible light but rather to the infrared scatter frequencies from scents of plants in the air stimulated by the visible light from a low intensity light source. Callahan, "Oviposition Response to the Imago of the Corn
Earworm Heliothis Zea (Boddie), to Various Wave Lengths of Light," Annals of the Entomological Society of America, Vol. 50, No. 5, September 1957.

A summary of scatter radiation can be found in Fabelinskii, Molecular Scattering of Light, translated by Robert T. Beyer, Department of Physics,
Brown University, Plenum Press, New York, 1968.

In a series of articles in the mid 1960's, Applicant demonstrated that the antennae of insects act as photonic, open resonator waveguides to collect and transmit infrared frequencies. See Callahan, "A High Frequency Dielectric

Waveguide on the Antenna of Night-Flying Moths (Saturnidae)," Applied Optics, Vol. 7, page 1425, August 1963; Callahan, "Intermediate and Far

Infrared Sensing of Nocturnal Insects, Part II, The Compound Eye of the Corn Earworm, Heliothis zea, and Other Moths as a Mosaic Opticelectromagnetic Thermal Radiometer," Annals of the Entomological Society of America, Volume 58, Number 5, pp. 746-756, September 1965; and

Callahan, "Insect Molecular Bioelectronics:A Theoretical and Experimental Study of Insect Sensillae as Tubular Waveguides, with Particular Emphasis on

Their Dielectric and Thermoelectric Properties," Miscellaneous Publications of the Entomological Society of America, Volume 5, Number 7, page 315-347,
June 1967.

In 1968, Applicant demonstrated the attractance of the mosquito Aedes aegypti to human vapor pumped by near infrared radiation in a totally dark environment. See Mangum et al., "Attractance of Near-Infrared Radiation to Aedes aegypti, " Journal of Economic Entomology, Volume 61, Number 1, pp.36-37, February 1968. This work with insect antennas is described in detail in Callahan, "Insect Antenna with Special Reference to the Mechanism of
Scent Detection and the Evolution of the Sensilla," Int. J. Insect Morphol. & Embryol, 4(5):381-430 (1975).

In 1977, Applicant demonstrated that attractance of night flying moths to candles is not due to the insect's eye and the candlelight, but is instead due to the insect's dielectric antenna and candle water-vapor infrared emissions to which the insect's antenna is tuned. See Philip S. Callahan, "Moth and candle: the candle flame as a sexual mimic of the coded infrared wavelengths from a moth sex scent (pheromone)", Applied Optics, Vol. 16, page 3089, December 1977, and Philip S. Callahan, "Trapping modulation of the far infrared (17 - tcm region) emission from the cabbage looper moth pheromone (sex cent)," Applied Optics, Vol 16, page 3098, December 1977.

For certain insect species, specific attractants (such as "pheromones," which are insect produced volatile compounds) have been chemically identified and synthesized. The isolation of sex and host plant attractant molecules has progressed steadily over the past few decades. Attractants have been utilized in various conventional traps but with poor results since these traps dissipate all of their (pheromone) scent in the air and in

only a few days are useless.

In U.S. Patent No. 3,997,785 to Callahan, which is incorporated by reference herein, Applicant described a system for vibrating a gold coated needle in a molecular scent vapor contained in an enclosed chamber in order to stimulate and emit narrow band maser-like energy from an infrared transmitting window for control of insects. This system, although providing advantages over other conventional solutions, was frequently ineffective because it failed to produce maser-like frequencies that closely mimicked the frequencies produced by the insect being controlled.

There is therefore a need for a device and method that can attract and/or control insects within a specified region, is harmless to the human population, and is relatively inexpensive and easy to operate.

Summary of the Invention

The present invention overcomes the problems with conventional solutions by utilizing natural (copied) scatter surfaces, natural vibratory modulating frequency, and associated pumping radiation to generate coherent or semicoherent radiation frequencies to control or attract insects. Thus, the present invention applies to the control of all insects in nature; such control acting either as an attractant radiation (e.g., for trapping) or a frequency quenching (i.e., jamming) radiation for insects.

The present invention provides a method and apparatus for emitting natural millimeter, infrared, visual, UV or UV-X-ray frequencies for control of insects. Control may involve attracting the insects or repelling them.

Attractance is achieved by emitting attractance frequencies of the insect to be controlled. Repulsion is achieved by emitting quenching (or jamming) frequencies timed to the photon communication system of the insect, or by emitting out of phase frequencies that interfere with the molecular communication systems of the insects.

These many functions and frequencies are realized with the use of a specially designed frequency (wavelength) emitter which utilizes the natural semiochemicals of a particular insect, and the dielectric scatter surface of the particular insect, to mimic the coded wavelength utilized by the organism in its day to day reproductive and food searching behavior.

The semiochemical or other behavioral molecules are confined in a closed chamber with a window that allows coherent or semi-coherent maser-like radiation frequencies to be emitted. In the center of the chamber is a plate having an etched scatter surface copied from the antenna, thorax, wing or leg of the insect. The plate with the scatter surface is mounted perpendicular to the edge of the window within the chamber. An adjustable grating is also provided to focus the maser-like radiation frequencies for emission through the window. The adjustable grating has a predetermined number of grooves to match the antenna dimensions (dielectric waveguide open resonator) of the appropriate insect.The scatter surface is at a right angle to the adjustable grating and mounted on a vibrating rod with a control to allow the scatter surface to be vibrated in the extremely low frequency range (i.e., between 1 Hz and 800 Hz depending on the insect). The semiochemicals are circulated over the vibrating scatter surface creating coherent or semi-coherent narrow band high intensity maser-like emissions that are emitted to the environment through the window. The coherent or semi-coherent maser-like emissions are used to control, attract, or jam the natural frequencies of insects.

Alternatively, the present invention provides a method and apparatus for emitting photonic waves which emulate natural waves which either attract or repel insects as desired. Emulation is accomplished through the use of a power source, a gas discharge tube, and a scatter surface soaked in an appropriate attractant. In operation, the gas discharge tube is excited by the power supply which results in gas discharge emissions. The scatter surface is mounted adjacent to the gas tube such that the energy resulting from the gas tube discharge is directed onto the scatter surface. This may be accomplished by mounting a cylindrical scatter surface above the gas tube. Attractant molecules attached to (or near) the scatter surface are thereby excited by the discharge energy, and begin to oscillate.When sufficient discharge energy is absorbed, the oscillation produces a photonic wave (or emission). The photonic wave is, in turn, received by the dielectric waveguide(s) of an insect (i.e., the insect's antenna). By varying the discharge energy, the scatter surface, and/or the attractant, the present invention may be "tuned" to achieve effective performance with a wide range of insects.

The energy output from the gas discharge tube may be varied in any of several ways. The gas used to fill the tube

may be varied to achieve energy output over a desired spectral range. The energy provided by the power source, used to discharge the gas tube, may be varied both in terms of frequency (i.e., charging rate) and/or amplitude. In addition, the surface of the gas tube may be treated to limit discharge emissions to any desired spectral range.

The scatter surface may also be varied in a number of ways. First, the physical shape of the scatter surface may be varied to enhance ease of construction of the present invention. Next, the spatial relationship of the scatter surface with respect to the gas tube may also be varied to permit direction of the photonic waves in a desired direction. Different substances may be used to construct the scatter surface, resulting in differing degrees of attractant absorption and/or vibration freedom for absorbed attractant molecules.

Brief Description of the Figures

The foregoing and other features and advantages of the invention will be apparent from the following and more particular description of the preferred embodiment of the invention, as illustrated in the accompanying Figures, in which:

Figure 1 is an illustration of a preferred embodiment of a coherent scatter and group wave soliton waveguide, surface enhanced emitter constructed in accordance with the present invention;

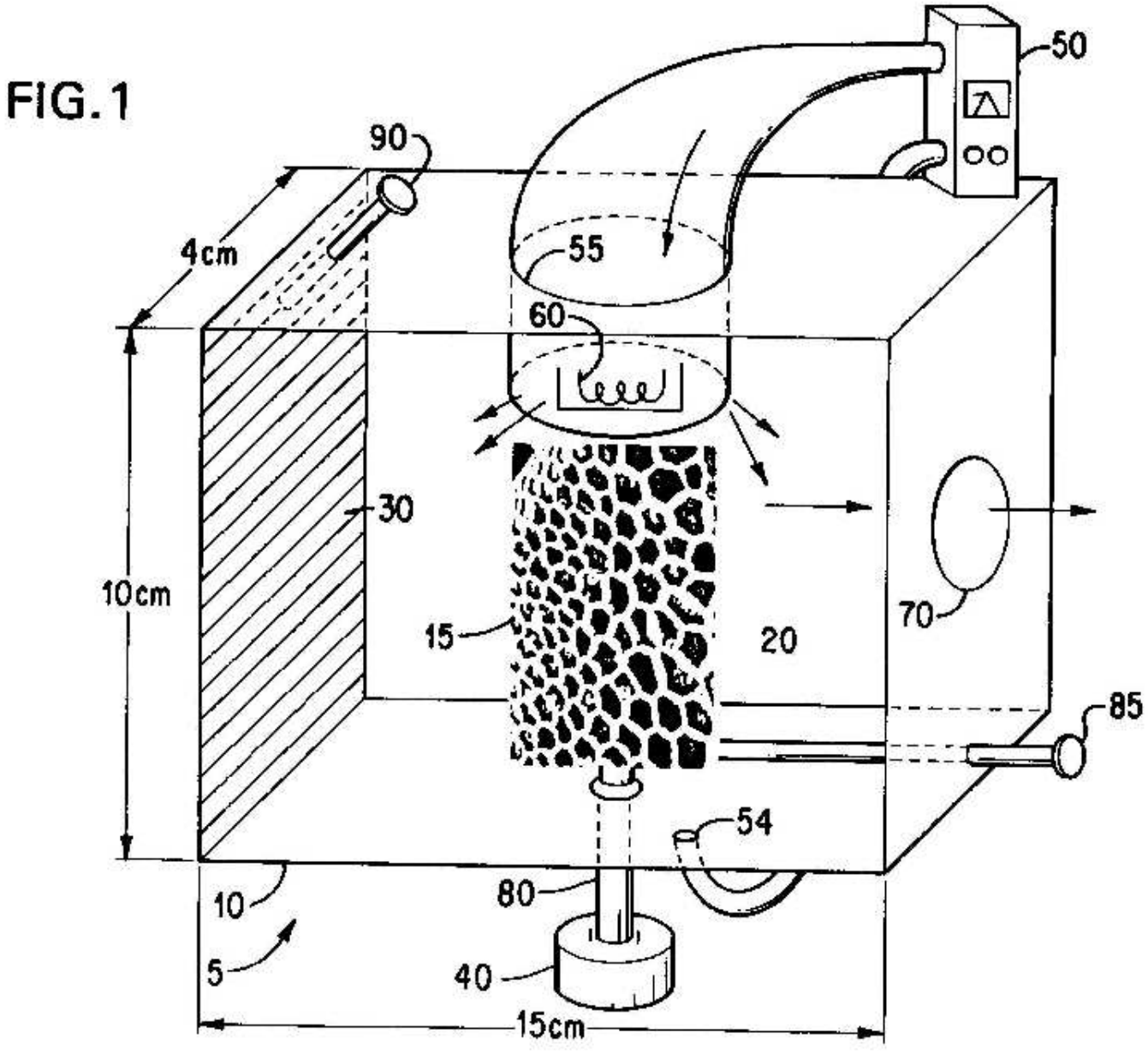

Figure 2(a) through 2(f) are photographs showing examples of various scatter surfaces found on the antenna, thorax, and legs of insects;

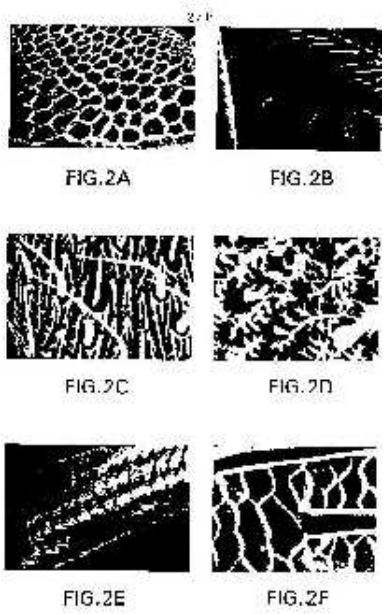

Figure 3 is an example of the scatter surface of the antenna of the cabbage looper moth Trichoplusia ni;

FIG.3

Figure 4 is a spectrum of the cabbage looper moth (Trichoplusia ni) pheromone;

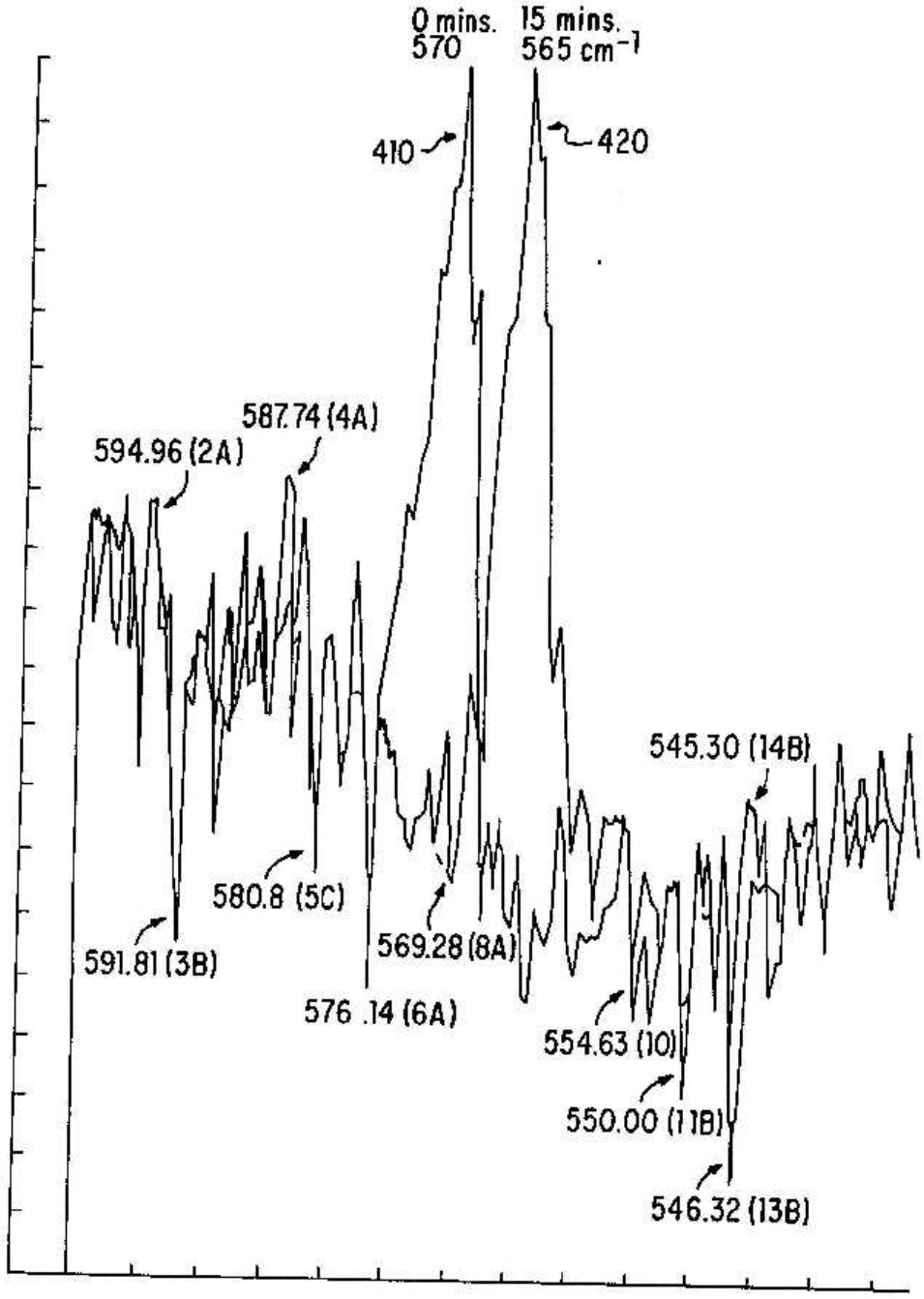

FIG 4

Figure 5 illustrates a spectrum scattered off the surface of oats, rice and peas in a small container with their surfaces orientated so that the spectrophotometer beam is illuminated on a flat plane of the outer surfaces of the seeds;

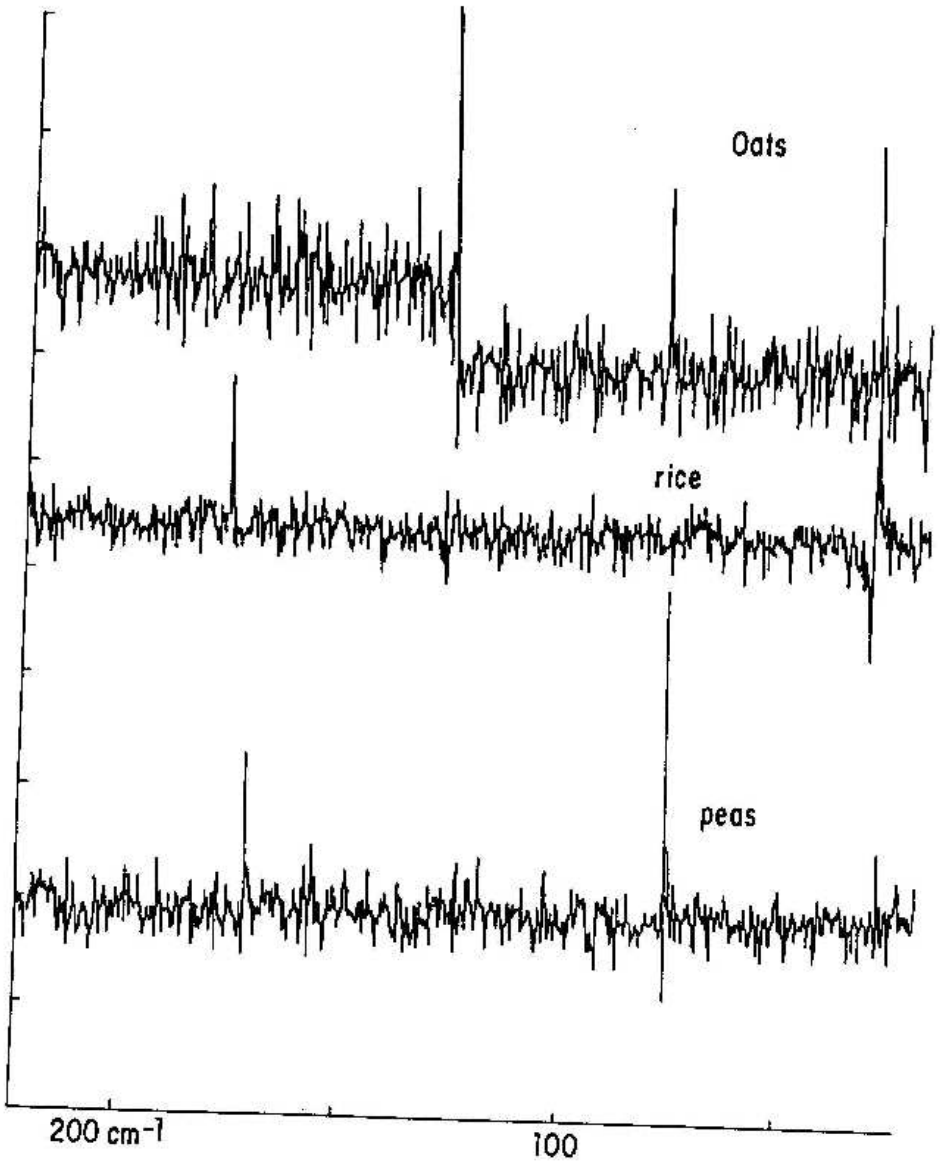

FIG. 5

Figures 6 illustrates spectrum of formaldehyde flowing across a 3600A Blacklight UV bulb;

FIG. 6

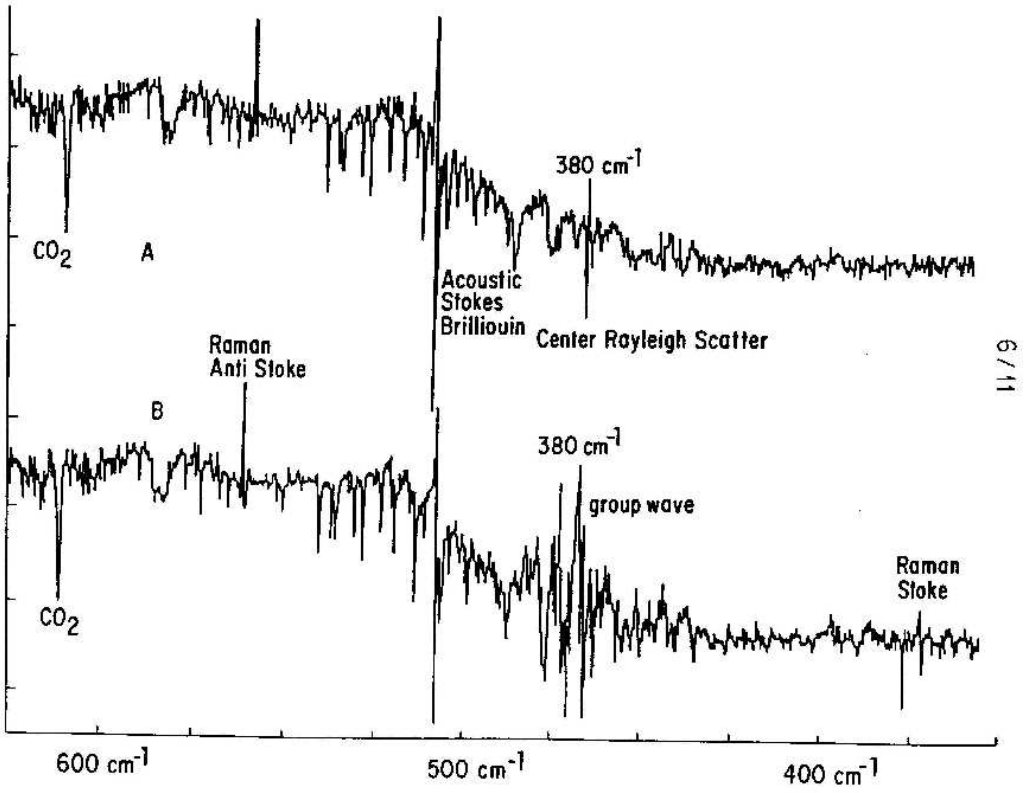

Figure 7 is a spectrum of the well known CO2 rotation line at 14.9 um;

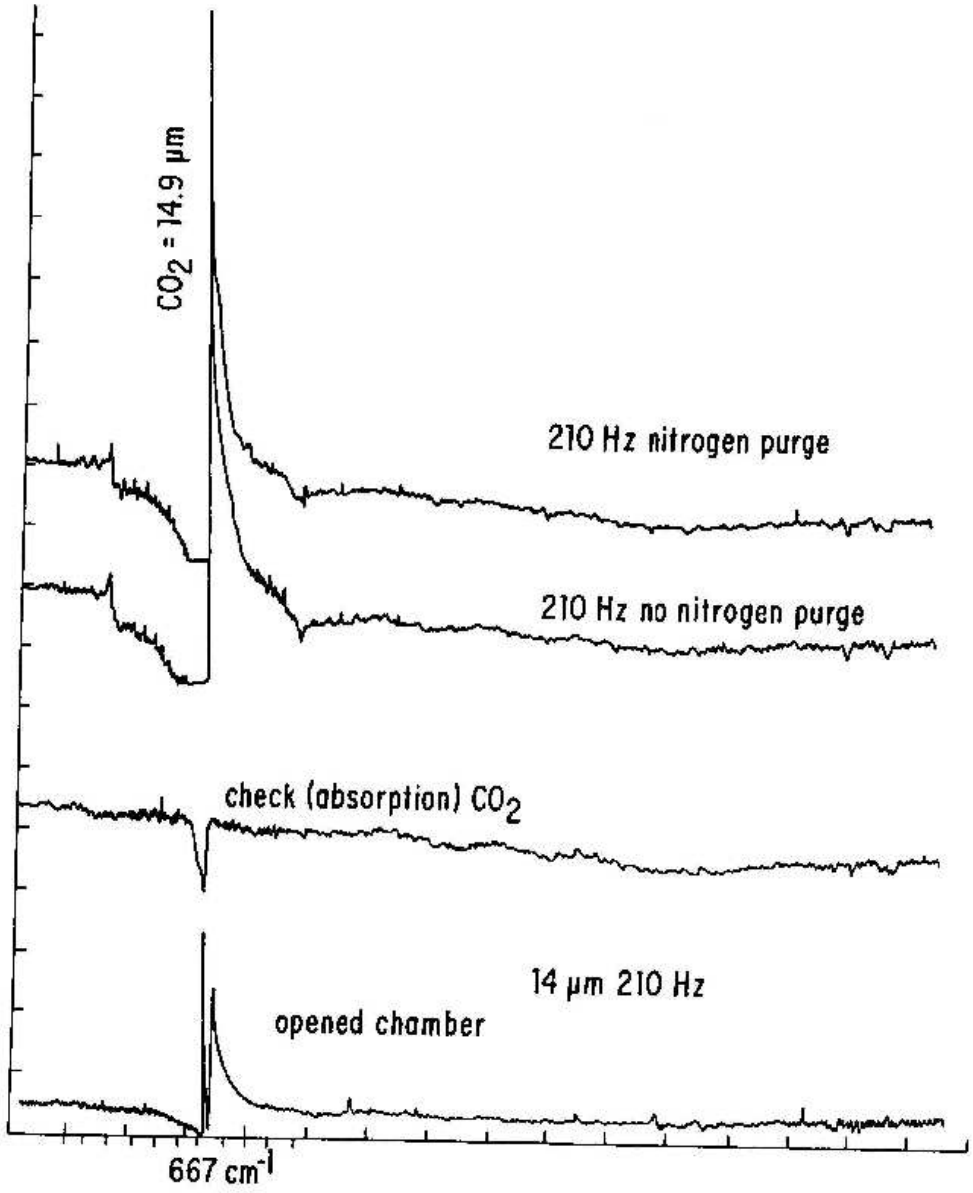

FIG. 7

Figure 8 is a spectrum of a group soliton atmospheric ELF wave;

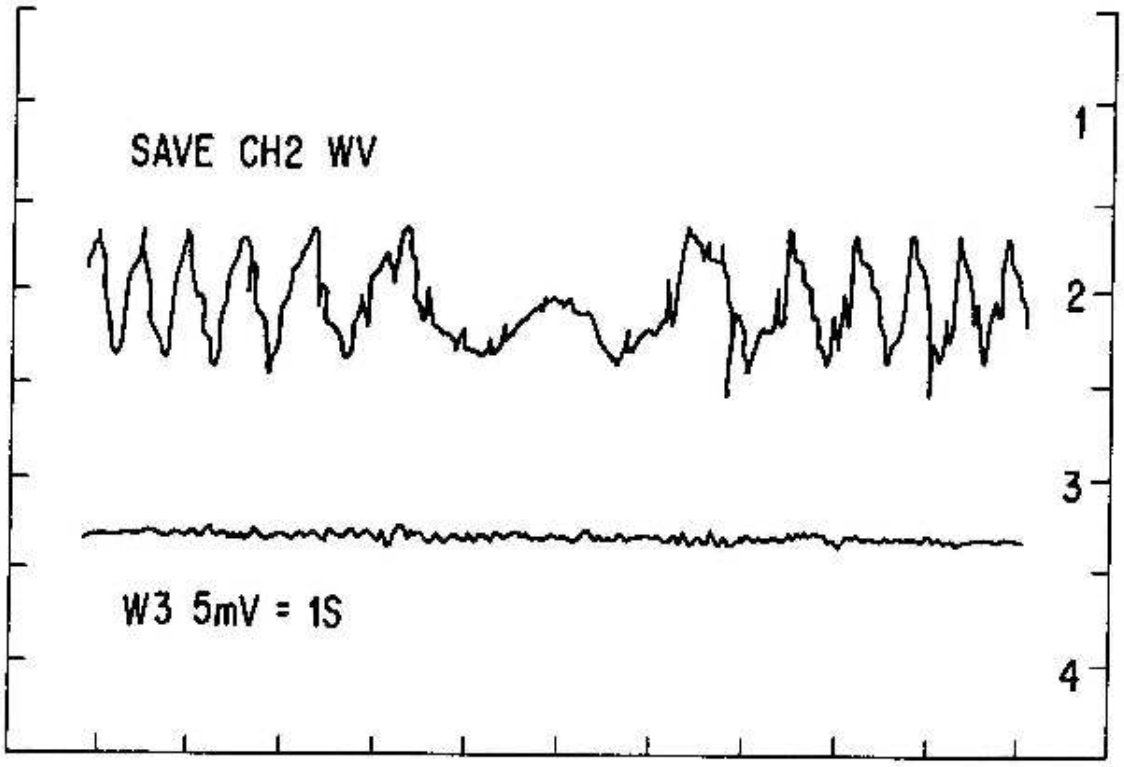

FIG. 8

Figure 9 is an illustration of a preferred embodiment of a coherent scatter waveguide constructed in accordance with the present invention;

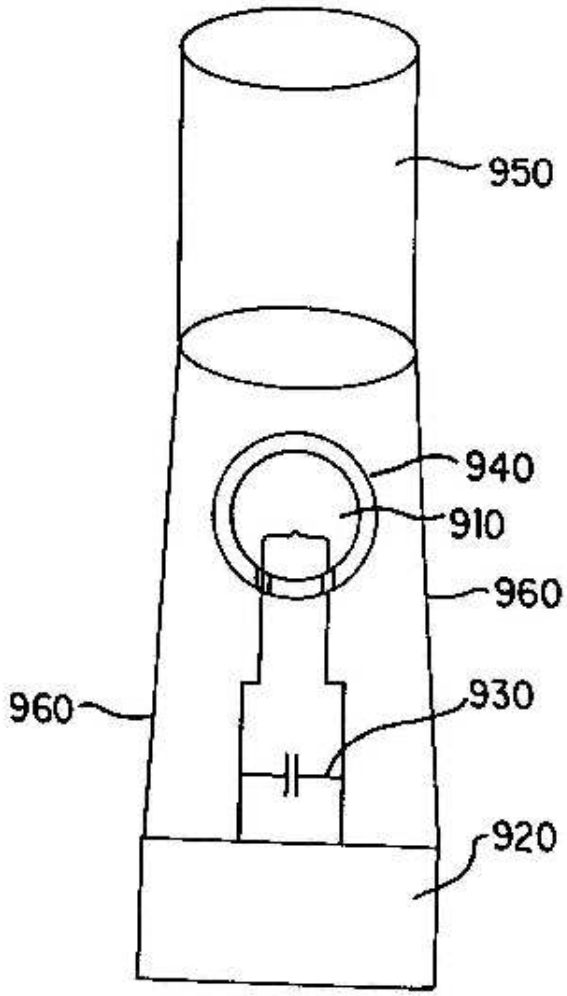

FIG. 9

Figure 10 is a photomicrograph of a fiberous cardboard multiplicative array utilized as a scatter surface in a preferred embodiment of the present invention;;

FIG. 10

Figure 11 is an illustration of a preferred embodiment of a coherent scatter waveguide constructed in accordance with the present invention;

Figure 12 is an illustration of a preferred embodiment of a coherent scatter waveguide constructed in accordance with the present invention; and

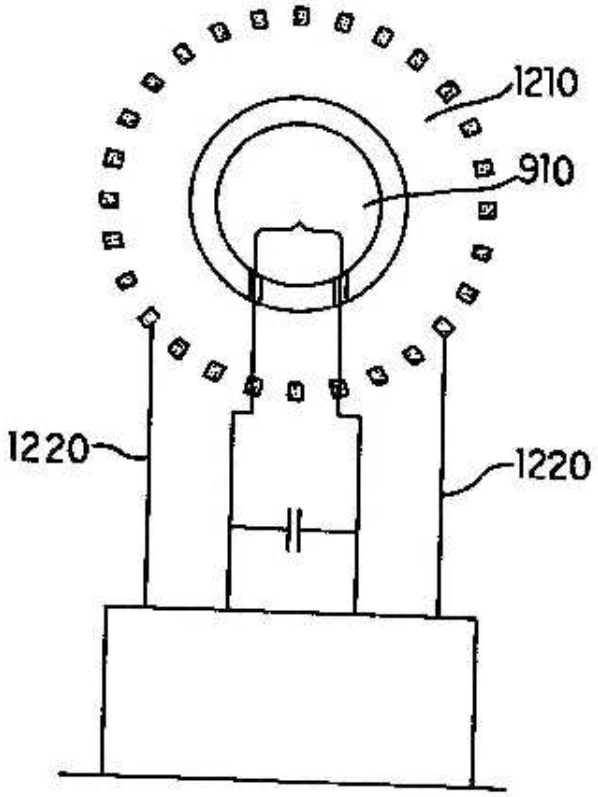

FIG. 12

Figure 13 is an illustration of a preferred embodiment of a coherent scatter waveguide constructed in accordance with the present invention.

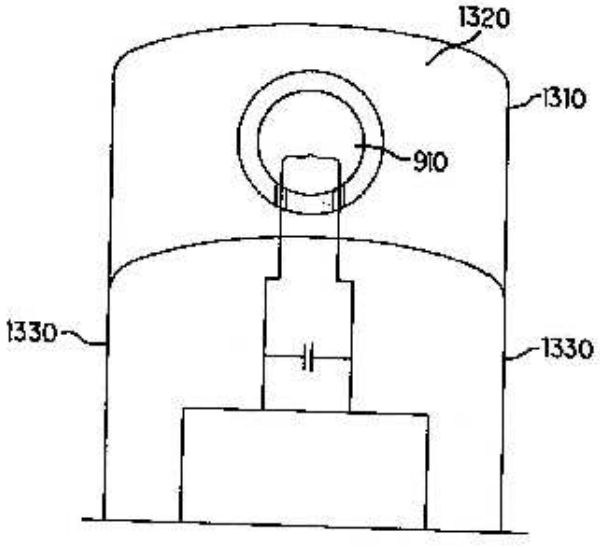

FIG. 13

Detailed Description of Preferred Embodiments

I. Operational Overview of a first embodiment

Figure 1 illustrates a preferred embodiment of the present invention. The present invention comprises a frequency

emitter 5 which provides a coherent scatter and group soliton waveguide, surface enhanced emitter for control of insects. This is accomplished by emitting attractance frequencies or conversely by emitting quenching (jamming) frequencies timed to the photon communication system of the insect. These functions are carried out by frequency emitter 5 which utilizes natural semiochemicals of a particular insect and the insect's natural dielectric scatter surface to mimic the coded wavelength utilized by the insect in its day to day reproductive and food searching behavior.

In this document, the term "semiochemicals" is taken to mean any molecule from an insect which naturally emits communication photons. The term control" is taken to mean the attractance of an insect to a confined area where it can be eliminated (e.g., by electrocution or insecticides) or the repulsion of the insect away from a specified geographic area.

Frequency emitter 5 comprises a chamber 10, a scatter surface 20, an adjustable grating 30, a vibrator/rotor motor 40, an air pump 50, a light pump 60, and an infrared window 70. A functional and operational description of these components is given below. In brief, the frequency emitter 5 generates narrow band high intensity maser-like emissions from semiochemicals contained within chamber 10. The semiochemicals are circulated through the chamber over the scatter surface 20. The pump flow rate (i.e., the rate the semiochemicals are circulated (in a closed system) over scatter surface 20) is set to match wind speeds that stimulate insects to search and respond to the semiochemicals. Scatter surface 20 is vibrated at an appropriate modulation frequency (typically in the extremely low frequency range).By circulating the semiochemicals over vibrating scatter surface 20, maser-like emissions that emulate the natural frequencies generated by an insect can be generated and emitted through window 70 into the environment.

A. Structural Description of the Present Invention

Referring again to Figure 1, chamber 10 can be any shape, such as a cube, globe, or a parabolic structure. However, the preferred embodiment is a cube measuring approximately 4 cm by 10 cm by 15 cm. In the preferred embodiment, chamber 10 is constructed of metal, plastic, or glass. However, any solid material can be used to construct the chamber 10. Chamber 10 has two holes 54, 55 formed on opposing sides for in and out air flow, respectively.

Chamber 10 is filled with semiochemical molecules or other behavioral molecules, such as pheromones or host plant scent molecules. Chamber 10 is sealed so that the semiochemical (i.e., attractant or quenching) molecules or other behavioral (e.g., scent) molecules can be circulated in a continuous fashion across scatter surface 20. In other words, the frequency emitter 5 is a closed system.

Placed in the center of the chamber 10 is a plate 15 having a scatter surface 20 etched therein. Plate 15 is made from metal or plastic. A micrometer tilt mechanism 85 is provided for adjusting the position of the scatter surface 20 in order to focus or fine tune the narrow band high intensity maser-like emissions (produced by circulating the natural semiochemicals across the natural scatter surface) through the window 70. In a preferred embodiment, scatter surface 20 is adjustable in all directions (e.g., vertically, horizontally, rotationally, pivotally, etc.).

The scatter surface is modeled, for example, after the antenna, thorax, wing or leg scatter surfaces found on all species of insects.

Present day etching technology has reached a state where micrometer dielectric or metal coated forms can be fabricated as scatter surfaces and amplifiers for short wave radiation in the millimeter, microwave, infrared (IR), visible and ultra violet (UV) region of the spectrum. Such miniature open resonator dielectric amplify us or surface enhanced scatter configurations are now being produced and are described in Jewell et al., "Microlasers," Scientific American, November 1991, Scherer et al., "Lasing in Submicron Wide Vertical Cavity Microlasers," Optics and Photonics News, December 1991, Grossman et al., "Lithographic spiral antennas at short wavelengths," Appl. Phy. Lett., Vol 59, No. 25, December 1991, and John, "Localization of Light," Physics Today, May 1991, which are all incorporated by reference herein in their entirety.

Modern solid state physics is beginning to demonstrate enhanced sensitivity and high amplification of frequencies utilizing array "dots." Such dots are microscopic scatter three dimensional antenna arrays fabricated and etched by holographic lithography onto transistor surfaces. Such etching leaves 3dimensional landscapes that "trap" and amplify frequencies. See Heitmann et al., "The Spectroscopy of Quantum Arrays," Physics Today, June 1993.

Insects, for example, have been using such 3-dimensional surfaces for frequency amplification for millions of years.

The technique of atom-probe ion microscopy demonstrates that the imaging of gas atoms that lie above the surface atoms and occupy the more protruding sites are analogous to scatter surfaces of organisms. Such a surface has a rough texture with many tiny projections, or aspirates. A rough surface is not good for imaging, however, unless it is designed with special edges or grooves (such as on an insect) to "focus" the atomic energies. Insects do not have rough surfaces but designed surfaces that enhance frequencies by oscillating surface segregation. Photographs of ions taken with a field ion microscope show soliton target waves in gases such as helium. Such soliton target waves are common at low energies from the atmosphere. See Tien Tsong, "Atom-Probe Field Ion Microscopy," Physics Today, May 1993. A soliton wave is a varying wave riding another wave.

Typical types of scatter surfaces for insects are listed in Table 1. Figures 2(a) through 2(f) are photographs showing examples of some of the scatter surfaces listed in Table 1.

Table 1

Table of Natural Surfaces

1. reticulated (springtails)

2. grooved or ridged (june beetles)

3. brush form (house flies)

4. ridged, cone form (cabbage looper moth)

5. circular group, peg form (aphids (Mvxuces Dersicae))

6. saw tooth form (witch moth (Erebrus))

7. comb peg form (honeybee)

8. multiple spike form (bird grasshopper)

9. rock crystal form (scale insects) 10. leaf shaped spike form (mosquitoes) 11. knobbed (aphids (Mvzus Dersicae)) 12. corn ear surface (tiger moth) 13. small knobbed surface (corn earworm moth) 14. large knobbed surface (Diptera sp.) 15. reticulated knobbed surface (Diptera sp.) 16. air scoop surface (fall armyworm moth) 17. vibrating hair surface (soldier fly) 18. helical corrugated surface (cabbage looper moth) 19. pine cone surface (Neochetina eichoriniae) 20. shingled (Brucifidae sp.) 21. ridged uplifted shingled (Hvdrophvchidae sp.) 22. irregular reticulated (springtails) 23. pit and hill form (ants) 24. elongated reticulated (springtails) 25. loops (Hessian fly)

Figure 2(A) shows a reticulated surface (#1, Table 1). Figure 2(B) shows a grooved or ridged (corrugated) surface (#2, Table 1). Figure 2(C) shows a ridged, cone form surface as found in the cabbage looper moth (#4, Table 1).

Figure 2(D) shows a leaf shaped spike form surface (#10, Table 1). Figure 2(E) shows a corn ear surface (#12, Table 1). Figure 2(F) shows a shingled surface (#20, Table 1). All of these surfaces can be etched into plate 20 using present day micro-etching technology.

The airtight chamber 10 has a special millimeter, infrared, visible, ultra violet, or X-ray window 70 formed therein. Window 70 is used for emission of the scatter coherent radiation (i.e., maser-like emissions) generated by circulating semiochemicals across scatter surface 20 and grating 30 (described below). In a preferred embodiment window 70 is constructed using a Krs 5 infrared window.

The adjustable grating 30 is constructed with the proper number of grooves to generally match the natural

dimension of the dielectric scatter antenna or sensilla (spines) of the organism being controlled. The adjustable grating should be gold plated for high reflectance in the visible and infrared region of the light spectrum. For example, the adjustable grating 30 is constructed with 20 groves/mm for cockroaches or 300-600 grooves/mm for small ticks or white flies. A list of typical grating dimensions for different insects is shown in TABLE 2.

TABLE 2 SPECIFICATIONS WITH AVAILABLE GRATINGS

EMI14.1

Cockroach Moth Moth Mosquito Tick White Gnat Fly

Grating 20 75 150 300 600 1200

(groovesimni)

Wavelength from: 185nm 185nm 185nm 185nm 185nm 185nm

Operating

Range to: 72 m 19.2 m 9.6 m 4.8 m 2.4 m 1.2 m

Adjustable grating 30 is positioned on the side of chamber 10 opposite to window 70. A micrometer tilt mechanism 90 is provided for adjusting the position of grating 30 in order to focus or fine tune the narrow band high intensity maser-like emission through window 70.

In a preferred embodiment of the present invention, the positions of both scatter surface 20 and grating 30 are adjustable (e.g., sideways and up and down) so that they can be positioned to stimulate (and/or focus) natural maserlike emissions. The maser-like emissions are reflected from scatter surface 20 to grating 30. The maser-like emissions are then in turn reflected through window 70. These coherent or semi-coherent maser-like emissions are used to control a specific type of insect in the environment outside frequency emitter 5.

Note, that in a preferred embodiment, after the micrometer adjustments have been made to scatter surface 20 and grating 30 to correspond to a particular insect (e.g. cabbage looper moth), these adjustments can be permanently fixed. Thus, frequency emitter 5 with the semiochemicals contained within (e.g., Z-7-dodecene-1-ol acetate pheromone for the cabbage looper moth) can be placed on site without any further adjustments necessary.

The etched scatter surface 20 is mounted on a vibrating rod 80 perpendicular to the edge of window 70 and at a right angle to grating 30. Vibrating rod 80 is connected to a vibrator/rotor motor 40. Vibrating rod 80 is designed to allow the scatter surface tilt rod 85 to be positioned to screw forward and press against the plate 15. This configuration assures that small angle variations can be made in the surface alignment of scatter surface 20 in relation to grating 30. Once again, grating 30 can also been adjusted using the micrometer tilt mechanism 90.

Vibrator/rotor motor 50 comprises two elements: A low frequency oscillator and a rotor motor (described below). The low frequency oscillator can be controlled to vibrate rod 80 between 1 Hz and 800 Hz (depending on the insect being controlled). Table 3 gives a list of frequency ranges that may be used to control specific insect groups.

Table 3

EMI16.1

Insect Group Frequency Range in cycles per second (CPS)

Saturnid moths (Saturniidae) 8-16

Butterflies (Rhopalocera) 8-21

Ants (Formicoidea) 12-20

Dragonflies (Anisoptera) 20-28

Sphingid moths (Sphingidae) 2645

Noctuid moths (Noctuidae) 35-55

Crane flies (Tipulidae) 44-73

Lady beetles (Coccinellaidae) 80-85

Horse flies (Tabanidae) 96-100

Yellow jackets (Vespidae) 110-115

March flies (Bibionidae) 126-140

Bumble bees (Apinae) 130-140

Fruit flies (Tephritidae) 150-250

Honey bees (Apinae) 185-190

Mosquitoes (Culicidae) 160-500

Air circulating pump 50 is provided to allow the semiochemical or other attractant or quenching molecules to be circulated across the vibrating scatter surface. Note that the chamber 10 is initially filled with the semiochemical or other attractant or quenching molecules before turning on the air circulating pump 50. The air flow is adjusted so that it mimics the air flow to which insects respond. That is, semiochemicals blowing at certain speeds through the air stimulate insects to search and respond to the chemicals. Thus, the semiochemical molecular flow is adjusted to match the natural air flow of airborne molecules that stimulate insects. In a preferred embodiment, the air flows from the top edge of scatter surface 20 to air pump 50 via opening 55, and is returned to chamber 10 through opening 54.

A light pump 60 is mounted directly above scatter surface 20. Light pump 60 can be any infrared, blue, ultra violet or UV-X-ray light source. An ultra violet (3600 A) light source is used in a preferred embodiment. Light pump 60 allows low intensity pumping radiation (DC) to be directed across scatter surface 20. Light pump 60 can be constructed in a number of different ways, such as: (1) DC filament source placed behind a filter (e.g., a color filter, infrared filter, UV filter etc.); (2) a light emitting diode of proper frequency (e.g., millimeter, infrared, light, UV or UV-X-ray); (3) a flickering light source (1 to 800 or more Hz) in which case the scatter surface 20 can be adjusted to synchronize with the flicker of the light pump 60; or (4) an etched grating light source which reflects a defined frequency from its surface and across scatter surface 20.

If the present invention is used to control insects in a large area, yard, field etc., frequency emitter 5 can be rotated 360" around a vertical axis using vibrator/rotor motor 40. This allows frequency emitter 5 to sweep the emitted radiation from window 70 across the large area. The rotation is accomplished simultaneously with the vibration. Given this configuration, the present invention is particularly adaptable to be used in a storage grain elevator, for example. Note that the frequency emitter 5 does not need a rotor motor to operate correctly. To operate correctly only a low frequency oscillator is required.

B. Tuning the Frequency Emitter 5

Described below are a number of physical-chemical parameters involved in tuning frequency emitter 5 for a particular insect (e.g., cabbage looper moth).

In order for the frequency emitter 5 to operate effectively one or more of these parameters may be involved. For example, the wrong temperature or the wrong concentration of the semiochemical may shift the emission out of "tune" diminishing the benefits of the present invention.

Temperature affects the wavelength of the maser-like emissions emitted from frequency emitter 5. As such, changing the temperature within the frequency emitter 5 can increase or decrease the performance of the present invention.

Generally, the frequency emitter should be operated between 30 to 120 F.

Higher temperatures produce longer wavelengths and lower temperatures produce shorter wavelengths in the maser-like emissions.

A higher concentration of semiochemicals produces longer wavelengths and a lower concentration of semiochemicals produces shorter wavelengths in the maser-like emissions.

Modulating the scatter surface at different frequencies can change the harmonics of the maser-like emissions. A higher modulating frequency results in the harmonics being farther apart, while a lower modulating frequency results in the harmonics being closer together.

Experiments in the field have demonstrated that semiochemicals blowing at certain speeds through the air stimulate insects to search and respond to the chemicals. If the velocity (measured in miles per hour (MPH)) is too low or too high the molecules do not collide and vibrate with the insects scatter surface at the frequency to which the insect naturally responds. The efficiency of frequency emitter 5 can therefore be increased by changing the flowrate that the semiochemicals are circulated through chamber 10.

Experiments have shown that efficiency has increased by changing the flowrate from 0.1 to 0.8 MPH.

Insects fly at different times of night and day. Since the environmental radiation (pumping radiation) often changes due to overcast or haze etc., the color and intensity of light may change from good to bad or vice versa. By changing the wavelength of the pumping radiation (i.e., changing the type of light pump 60) the amplitude of the maser-like emissions can also be altered to correspond to a particular insect.

It is important that the circulating molecules be of the correct degree of freedom (i.e., not to close together or to far apart) to assure coherent emission at vibrating scatter surface 20. The emissions should be directed at a right angle against grating 30 and reflected out of window 70. Nitrogen may be added to the molecular semiochemical (by experimentation) in order to provide a carrier for the emitting molecules and to obtain the correct degrees of freedom in the diluted vapor.

As seen from above, fine tuning the frequency emitter 5 can be a challenging process which includes experimentation within the natural environment of the insect. Along with the above techniques, Table 4 provides a number of other factors that should be considered when operating the present invention.

Table 4 1. Efficiency can be increased by applying an electret effect (plus and minus charge). The electret effect can be obtained from a purchased
teflon electret, or made by placing a teflon sheet between two plates at 2000 volts and slightly heating the sheet. An electret effect orients
molecules. If the molecules form a single layer it is referred to as a "monolayer effect." 3. Semiochemical concentration increase can broaden the frequency line.

4. Adding (CH)2" in the semiochemical chain can produce a shift in the frequency line.

5. Frequency emissions not only occur in large windows (2, 5, 7, to 14 Um), but also in micro (e.g., narrow) windows between the water
rotation absorption bands. However, the frequency emissions will be quenched if they coincide with the water rotation absorption bands.

6. Doping by adding extra (CH)2n or (CH)3n shift or quenches frequencies.

7. Doping with minute amounts of ammonia (NH)3 can increase efficiency (i.e., the ammonia acts as a catalytic agent).

8. Medium to weak primary wavelength sidebands are typically associated with strong emissions. Adjusting the wavelength of the sidebands can
oftentimes produce better results. For example, an insect might be more inclined to be tuned into the stronger wavelengths of the sidebands.

The teachings of the present invention can also be extended to a photonic waveguide integrated diode circuit having etched scatter surface contained therein. The diode can be used to control insects since present day technology makes it feasible to reduce this entire scatter biological control chamber to a single emitting diode.

C. Examples

As shown in Figures 3 through 14, emissions from insect semiochemicals (pheromone, plant seed, formaldehyde and CO2, respectively) can be stimulated to emit narrow band maser-like signature frequencies by blowing them across a natural scatter surface. These semiochemicals are modulated with the same frequencies that the insect vibrates its antenna, as shown in
Table 3. Given below are a few examples of the type of insects that can be controlled with the present invention.

1. Trichoplusiani

Figure 3 is an example of the scatter surface of the antenna of the cabbage looper moth Trichoplusia ni. The sensilla (pheromone sensors) dielectric waveguide spines can be seen protruding between the ridged cones of the scatter surface. The dielectric waveguide sensilla (spines) themselves have corrugated scatter surfaces. To control the cabbage looper moth, scatter surface 20 would be modeled after this surface.

Figure 4 is a spectrum of the cabbage looper moth pheromone Z-7-dodecene1-ol acetate. Chamber 10 is filled with this semiochemical molecule and pumped by blue light via light pump 60. Since 55 Hz is the antenna vibration frequency of the cabbage looper moth, scatter surface 20 located within chamber 10 is vibrated at this frequency. A 17 llm water vapor microwindow is used. Water vapor (e.g., 2A, 3B, 4A, 5C, etc.) and pheromone emission lines 410 and 420 are designated. Pheromone emissions 410 and 420 frequencies shift from 570 ,tm to 565 m over a 15 minute period, respectively, due to deliberate heating in chamber .10 (i.e., temperature tuning). Concentration tuning is also evident by changing the amount of the pheromone.

2. Plodia interpunctella

The Indian Meal moth (Plodia interpunctella) destroys millions of dollars of stored grain each year all over the world. Typically gains include oats, rice, and peas. Figure 5 is a spectrum scattered off the surface of the seeds of oats, rice and peas in a small container with their surfaces orientated so that a spectrophotometer beam illuminated the flat plane of the outer surfaces of the seeds. The scent outgassing from the surface of each group of plant seeds shows a group of narrowband coded emissions (like a bar code). These nonlinear maser-like emissions represent acoustic Stokes Brilliouin and Raman scatter from the outgassing plant scents. In order to control the Indian Meal moth, chamber 10 is filled with one of the semiochemicals shown in Figure 5.

Scatter surface 20 is modeled after the antenna surface of the Indian Meal moth (shown in Figure 2F), and modulated at 30 Hz (i.e., the modulation frequency of the antenna of the Indian Meal Moth) to produce narrow band maser-like emissions. These emissions emitted through window 70 can be used to control (and consequently eliminate within a given area) the Indian
Meal moth.

3. Plecice nearctia

Figure 6 is a spectrum of formaldehyde flowing across a 3600A Blacklight UV bulb. Formaldehyde is a powerful attractant to the Love bug (Plecice nearctia), a nuisance insect that is attracted to highways by the aldehydes in exhaust fumes.

Spectrum A is a scan with the formaldehyde modulated at 130 Hz (i.e., the antenna vibration frequency of the lovebug antenna). Spectrum B is formaldehyde also modulated at 130 Hz but with the vapor blowing at high speed (10 mph) across the interferometer infrared beam. The pumping radiation is still 3600A UV. The Rayleigh center scatter line which is narrowband (maser-like) at 380cm becomes a group wave with a Gaussian distribution at fast

air speeds. Such group waves can be utilized to amplify or quench the organisms semiochemical communication systems.

4. Mosquitoes

Figure 7 is a spectrum of the well known CO2 rotation line at 14.9 ym. This line can be stimulated to emit very strongly the vibration frequency of many species of mosquitoes, stable, and horse flies by modulating it at 210 Hz.

Emission is stimulated by a slight nitrogen purge, a gentle breeze, and the 210 Hz modulated frequency. Addition of a trace of lactic acid causes slight amplification and more signals to emerge in this region. Many insects that attack animals are attracted to CO2-lactic acid. The pumping radiation is near infrared in the 1 & 2 ym region.

D. Detection of Emissions of Frequency Emitter 5

The frequency and or harmonics emitted from frequency emitter 5 may be detected by a high resolution Fourier analysis interferometer spectrophometer (not shown). In a preferred embodiment, the maser-like emissions can be detected by the apparatus described in a U.S. Patent Application Serial
Number 08/047,486, filed 4/19/93, entitled "Photonic Ionic Cord Detector of Group Waves," by inventor Philip S. Callahan. The '486 patent application is hereby incorporated by reference in its entirety.

Figure 8 is an oscilloscope recording of a group soliton atmospheric ELF wave useful for modulating molecular scatter radiation and discovered by the
Applicant on trees and human skin surfaces. Such group soliton waves are also observed as stimulated emission from insect semiochemicals attractants (e.g., Fig. 6), and are a part of the control configuration of such emissions for biological organisms. That is, the group soliton wave is a universal frequency that can be used to control insects. Although experimentation may indicate that other frequencies are more suited for a particular insect the group soliton wave has been shown in experiments by Applicant to control a wide range of insects.

Conversely, frequency emitter 5 can be adapted to emit a gaussian distributed scatter group wave to quench (jam) an attractant or unwanted frequency.

II. Operational Overview of Another Embodiment

Figure 9 illustrates another embodiment of the present invention. In this embodiment, the present invention comprises a discharge gas tube 910, a strobe circuit 920, a condenser 930, a tube shield 940, a scatter surface 950, and supports 960. In operation, the discharge from gas tube 910 provides pumping radiation which is directed onto scatter surface 950. Gas tube 910 may be any radiation or light source capable of producing a discharge output covering a desired spectral range (i.e., that portion of environmental radiation spectrum to which the insect to be controlled is naturally sensitive). Gas tube 910 is preferably a Radio Shack Xenon Strobe Part No. 61-2506. The gas contained within gas tube 910 is therefore selected to ensure that the characteristic pumping frequency of the insect to be controlled is generated.

Strobe circuit 920 and condenser 930 provide the energy required to excite gas tube 910, as well as control the duration of each strobe and the time interval between strobes. Tube shield 940 protects gas tube 910 from shock, and may also be treated to limit transmission of only selected frequencies (spectral energies) upon discharge of gas tube 910.

Scatter surface 950 is exposed to semiochemicals or any suitable attractant or quenchant molecules (hereafter "attractant"), and provides a medium for excitation of the attractant. Scatter surface 950 is preferably soaked in attractant, and thereby retains attractant molecules through adhesive and/or cohesive bonding forces. By varying the material and/or construction of scatter surface 950, the present invention may be further tuned to accommodate various insects. Supports 960 suspend scatter surface 950 above gas tube 910 so as to permit discharge radiation to excite attractant molecules on (or near) scatter surface 950. Power for strobe circuit 920 may be derived from any suitable power source, including DC batteries contained within strobe circuit 920, an external DC source (not shown), or an external AC source (not shown).

A. The Pumping Mechanism

As stated above, the present invention controls insects by exciting attractant molecules at characteristic frequencies associated with various insects. The excited molecules, in turn, emit a maser-like photonic wave which is sensed by nearby insects and which may have an attractive or a repellant effect (depending on whether a semiochemical, attractant, or quenchant is used).

The effectiveness of the present invention therefore derives directly from the coherency and/or intensity of these maser-like photonic emissions. By varying different parameters of the invention, the photonic emissions may be tuned to optimize the performance of the invention.

Towards this end, several of the parameters that may be varied are discussed in detail below. First, discharge gas tube 910 is considered. As shown in
Figure 9, gas tube 910 provides the excitation energy used to directly excite the attractant molecules. By controlling the spectral output of gas tube 910, excitation of the attractant molecules may be increased within any desired spectral region. Several methods are preferred for accomplishing this.

First, the gas contained in gas tube 910 may be selected to provide discharge energy within a particular spectral range. For example, Xenon gas is ideally suited for attracting mosquitos because of its strong discharge emission within the frequency range to which mosquitos are especially sensitive (Near-IR).

In addition, tube shield 940 may be treated to limit the emissions from the discharge of gas tube 910 to any spectral range(s) of interest. For example, by coating tube shield 940 with an IR passing filter, the relative intensity of molecular excitation in the desired IR energy band is increased. In addition, any flash or glare that may be annoying to humans is eliminated.

Next, additional variation of the gas discharge excitation energy may be achieved by varying the intensity and/or pulse rate of the discharge of gas tube 910. Gas tube 910 is discharged when the energy stored on condenser 930, supplied from strobe circuit 920, is sufficient to excite the gas. By varying the size of condenser 930, the stored energy (which is ultimately dissipated by the "strobe" of gas tube 910) may be varied. In addition, the time interval between "strobes" may be controlled by varying the charge rate of strobe circuit 920. Experimentation has demonstrated that good results are achieved when the delay interval between strobe bursts is in the range of about 1 second to 30 seconds, depending in part on ambient conditions.As will be immediately recognized by one skilled in the art, the size of condenser 930 as well as the charging rate of strobe circuit 920 may be varied to control the strobing of gas tube 910.

B. The Scatter Surface

Beyond the spectral discharge, the effectiveness of the present invention is also directly dependent on the construction of the scatter surface which is used to support generation of the maser-like photonic waves. Referring again to Figure 9, scatter surface 950 is shown supported above gas tube 910. While this orientation is useful to permit convenient orientation of the constituent parts of the invention, any number of alternative arrangements are possible.

Figures 11, 12, and 13 represent other preferred arrangements, which are discussed more fully below. The common requirement among these preferred arrangements is that the discharge energy from gas tube 910 is able to interact with the attractant on and/or around the scatter surface.

In Figure 9, scatter surface 950 is preferably a 1/8 inch thick cardboard roll, approximately 4 cm in diameter and approximately 8 cm in height. The cardboard roll is soaked in anractant before it is exposed to the discharge radiation from gas tube 910. Figure 10, a high magnification closeup of scatter surface 950, shows the multiplicative array 1010 formed by the cardboard material. When soaked in attractant and then exposed to discharge radiation, molecules of the attractant on (and suspended near) the multiplicative array 1010 are excited and emit maser-like photonic waves.

The intensity and coherency of these waves, dependent in part on the discharge radiation, is also influenced by the geometry of the scatter surface.

Cardboard has been shown to work well, in part because of the degree of vibrational freedom afforded to attached attractant molecules as well as due to the porosity of the material (which can therefore hold many molecules of

attractant).

As stated above, other scatter surface configurations may be employed to vary the coherency and/or intensity of emitted maser-like photonic waves. Almost any scatter surface configuration may be utilized, subject to the requirement that the surface selected be able to support molecules of attractant with some degree of vibrational freedom. For example, Figure 11 depicts a configuration where gas tube discharge source 910 is essentially surrounded by the scatter surface 1110. In this configuration, scatter surface 1110 must be sufficiently porous to allow the discharge energy from gas tube 910 to excite attractant molecules on scatter surface 1110. Similarly, Figure 12 depicts a scatter surface 1210 essentially encasing gas tube 910. Like scatter surface 1110, scatter surface 1210 must permit discharge energy from gas tube 910 to excite attached attractant molecules.Supports 1220 are used to position scatter surface 1210 near gas tube 910, as detailed above. Referring to Figure 13, a configuration particularly suitable for varying photonic coherency is presented. Scatter surface 1310 is curved, only partially surrounding gas tube 910, so as to focus emitted photonic waves in a desired direction. Supports 1330 are used to position scatter surface 1310 in any desired orientation. Furthermore, the radiant surface 1320 of scatter surface 1310 may be covered with velcro, or a similar material. The velcro "hooks" or "loops" provide both desired attractant retention as well as vibrational freedom in such a fashion as to align the molecular vibration of the attractant molecules. A focussing effect is therefore realized, producing increased intensity and coherency of the emitted maser-like photonic waves.

C. The Attractant

As stated above, the scatter surface of the present invention must be soaked in (or treated with) a suitable semiochemical, attractant or quenchant. The particular solution used depends on the insect to be controlled. For example, excellent results were achieved in mosquito attracting tests when the attractant used was a saline solution which approximated human sweat. A preferred composition for this saline solution is presented in Table 5 (below).

Table 5 - Saline Attractant

EMI28.1

Material (Chemical Symbol) Content (%)

Sodium (Na) 10.7

Chlorine (CI1) 19.7

Bicarbonate (HCO3) 1.4

Magnesium (Mg) 1.2

Potassium (K) 0.4

Calcium (Ca++) 0.4

III. Conclusion

An apparatus has been disclosed for generating coherent or semi-coherent radiation frequencies to control or attract insects. While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

A FREQUENCY EMITTER FOR CONTROL OF INSECTS, BACTERIA, VIRUS AND OTHER BIOLOGICAL ORGANISMS
WO9508131

The invention overcomes the problems with conventional solutions by utilizing natural (copied) scatter surfaces (20), dielectric spine (sensilla) forms, correct pumping radiations (60) and correct vibratory modulating frequency (40) to generate coherent or semi-coherent radiation frequencies to control or attract insects. Such control acting either as an attractant (e.g., for trapping) radiation or a frequency quenching (i.e., jamming) radiation for insects.

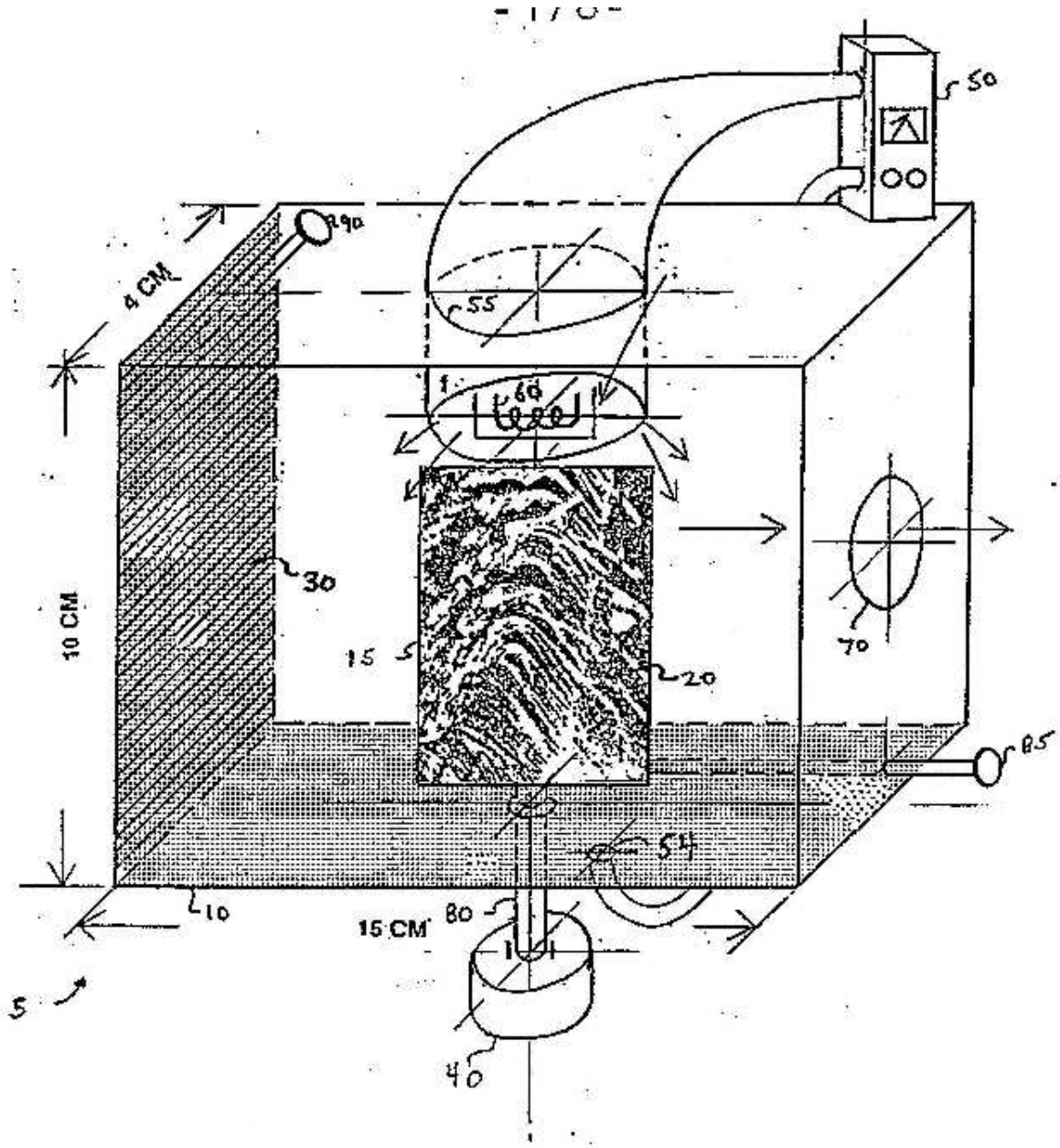

Figure 1

System and method for producing highly amplified radio signals for feedback into the human body
US5449376

The present invention includes an apparatus and method for generating, duplicating, and transmitting biophotonic radio frequencies that propagate along the atmospheric boundary layer of the human skin and the earth's atmosphere. These biophotonic radio frequencies are applied to a human patient for therapeutic purposes. This function is realized with the use of a series of oscillators (i.e., electronic function generators) designed to produce modulated or unmodulated sine and square wave photons. The oscillators are further adapted to emit the modulated or unmodulated sine and square wave photons from a dielectric or metal antenna built as loops into the walls of a diamagnetic-paramagnetic chamber. When a person is seated in the chamber, the photons of energy from the waves generated along the loop antenna penetrate the human body and provide a variety of therapeutic benefits. Among these therapeutic benefits are relief of rheumatic muscular pain, slowing the metabolism, increasing the efficiency of the immune system, eliminating certain psychosomatic ailments, and suppressing cancer.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to an electronic photonic method and apparatus for using natural radio frequencies for therapeutic purposes, and more particularly, a system and method for generating a highly amplified radio signal comprising extremely low frequency or very low frequency radio signals for feedback into the human body for therapeutic purposes.

2. Discussion of Related Art

The present invention described herein is based on the early work of Snape, d'Arsonval, Rabinovitch, and Leduc. In particular, Snape pioneered the use of extremely low radio frequencies (ELF) as an anesthetic in dental extraction (Snape, J., On electricity as an anesthetic in dental extractions, Trans. Odont. Soc. Gr. Brit., pp. 287-312. (1869)). Subsequently, in 1890, Arsine d'Arsonval demonstrated that ELF pulsed electrical currents, ranging from 2500 Hz to 10,000 Hz, induced general anesthesia in humans. Similarly, in 1902, Leduc demonstrated that a pulsed electrical DC current applied to the central nervous system could effectively induce anesthesia. Rabinovitch did extensive work in the area of electric analgesia sleep and resuscitation (Rabinovitch, L. G., Electric Analgesia Sleep and Resuscitation Anesthesia (chap. XVI), ed. J. T. Gwatheny. D. Appleton & Co., New York, pp. 628-643 (1914)). More recently, Czaja demonstrated that treatment in the ELF frequency range enhances the immune system (Czaja, W., Comparative Studies of Electro-analgesia and Barbiturates, Polski Archirum Weterynaryjne, pp. 205-224 (1986)).

Between 1965 and 1973 Applicant demonstrated that antennae sensilla on insects act as photonic waveguides to collect and transmit infrared frequencies. From this early research, Applicant postulated that living systems (e.g., insect spines and plant fibers) also utilize the radio portion of the frequency spectrum to energize photons from radio and infrared emitting molecules. The requirement for detecting and or stimulating infrared and radio emissions from living systems is the ELF modulation of the organic and gaseous interface located at the waxy surface of the system. That is, living systems store coherent photon emissions from the external environment which become part of the self-organization of the living system. It has been demonstrated that ELF frequencies in living systems range from 10@3 Hz in nerve action potentials to 10@-2 Hz for physiological functions.

Based on these principles, Applicant has determined that radio waves in the ELF region of the radio spectrum are propagated along the atmospheric boundary layer of the human skin. ELF in the range of 800 Hz to 5200 Hz averaging 1000 Hz, with narrowband 10,000 Hz to 150,000 Hz sideband ELF radio signals are natural to the skin surface. The 700 Hz to 10,000 Hz region of the frequency spectrum is the region of so called radio "whistlers" (i.e. radio signals) from atmospheric lightning strikes around the world. It is this atmospheric electricity that modulates the frequencies from the atmospheric boundary layer of the skin. These modulation frequencies are equivalent to the 3 Hz to 40 Hz oscillations discovered by W. O. Schumann stimulated by lightning. These flicker modulations (which are approximately 3 Hz to 6 Hz) can be observed on an oscilloscope while measuring the 1000 Hz and 10,000 sidebands present on the human skin.

In 1952, Schumann calculated the atmospheric cavity resonance between the earth and ionosphere as being in the low ELF region (e.g., 1 to 40 Hz). In 1962 H. L. Koening measured these photonic radio waves and pointed out that some of them fall in the same region as human EEG frequencies between 0.5 and 3 Hz. In 1974 M. A.

Persinger found ELF field effects on mammals and persons. A summary of the therapeutic effects of ELF is given in Ehrmann et al., "Influence of Altering Magnetic Fields [Frequencies Between 1 and 20 Hz] on Psychosomatic Ailments", presented at the second Bioclimatological Colloquium (1976).

The above work deals with the effect of radio frequencies on the diseased body. However, these articles do not consider the modulation of waves by lower frequencies or the wave form of the treatment frequencies. Nor do they contemplate a specific environment for applying radio frequencies to the diseased body for therapeutic purposes.

BRIEF DESCRIPTION OF THE INVENTION

These and other advances concerning electricity and its effect upon living systems, as well as the discovery that radio waves in the ELF region are propagated along the atmospheric boundary layer of the human skin are utilized by the present invention. The present invention includes an apparatus and method for generating the biophotonic radio frequencies that propagate along the atmospheric boundary layer of the human skin. The present invention further includes a method and apparatus for using these radio frequencies for therapeutic purposes. In addition, exact human-atmospheric, stone, sand, and plant frequency ranges, their modulation parameters, and their exact waveforms are elucidated herein.

These functions are realized with the use of a series of oscillators (i.e., electronic function generators) designed to produce modulated sine wave and square-like wave photons wave photons. The oscillators are further adapted to emit the modulated sine and square wave photons from a dielectric or metal antenna built as loops into the walls of a diamagnetic-paramagnetic chamber. When a person is seated in the chamber, the photons of energy from the waves generated along the loop antenna penetrate the human body and provide a variety of therapeutic effects. Among these therapeutic effects are relief of rheumatic muscular pain, slowing the metabolism, increasing the efficiency of the immune system, eliminating certain psychosomatic ailments, and suppressing cancer.

BRIEF DESCRIPTION OF THE DRAWING AND SPECTRUM

The foregoing and other objects, features and advantages of the invention will be apparent from tile following more particular description of the preferred embodiments of the invention, as illustrated in the accompanying drawings in which:

FIG. 1 (A) shows a front view of a treatment chamber constructed in accordance with the present invention.

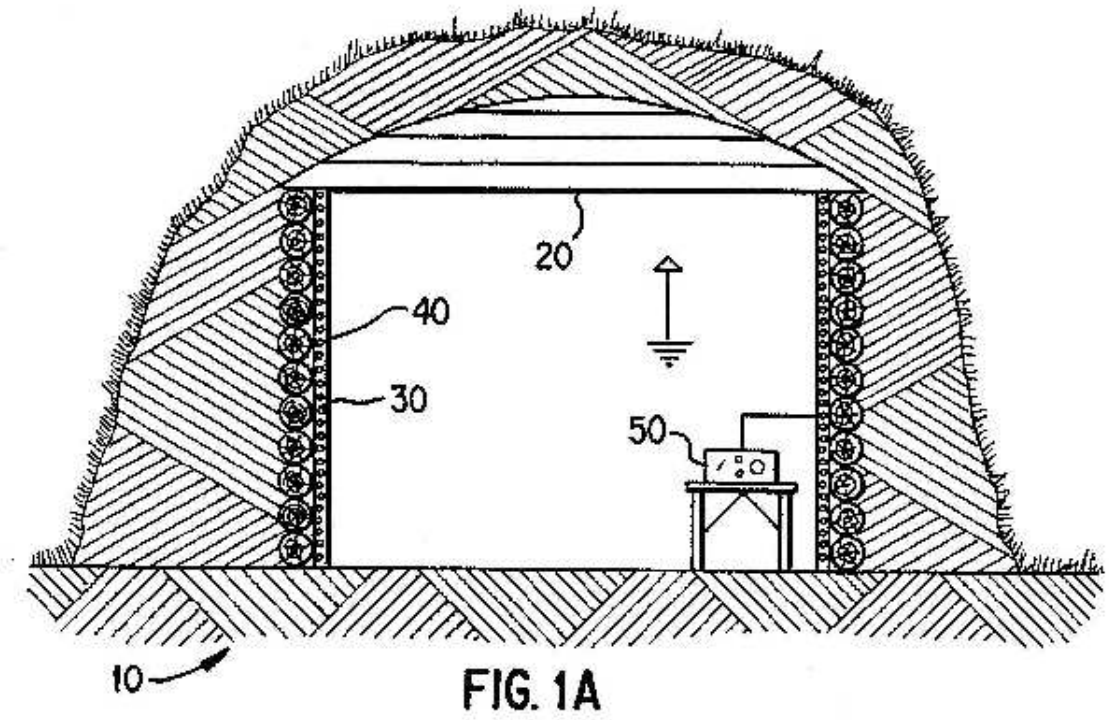

FIG. 1A

FIG. 1 (B) shows a top view of the treatment chamber.

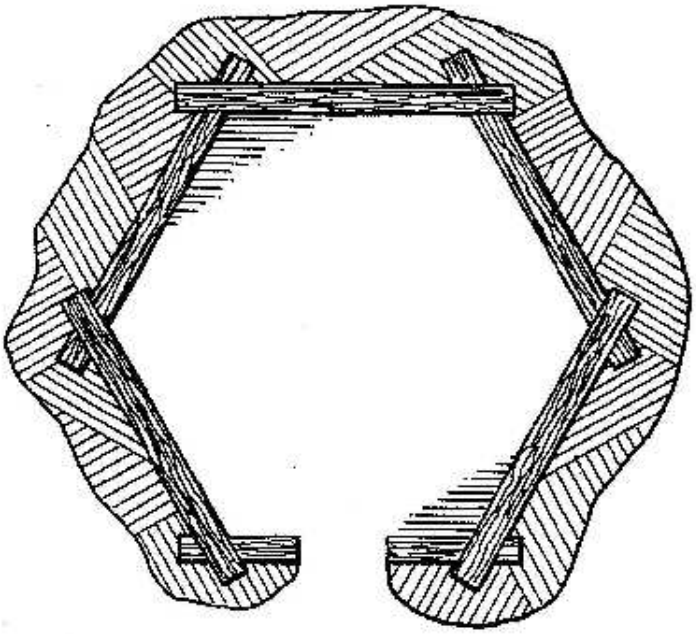

FIG. 1B

FIGS. 2(A) and 2(B) show a derailed block diagram of a wave generator constructed in accordance with the present invention.

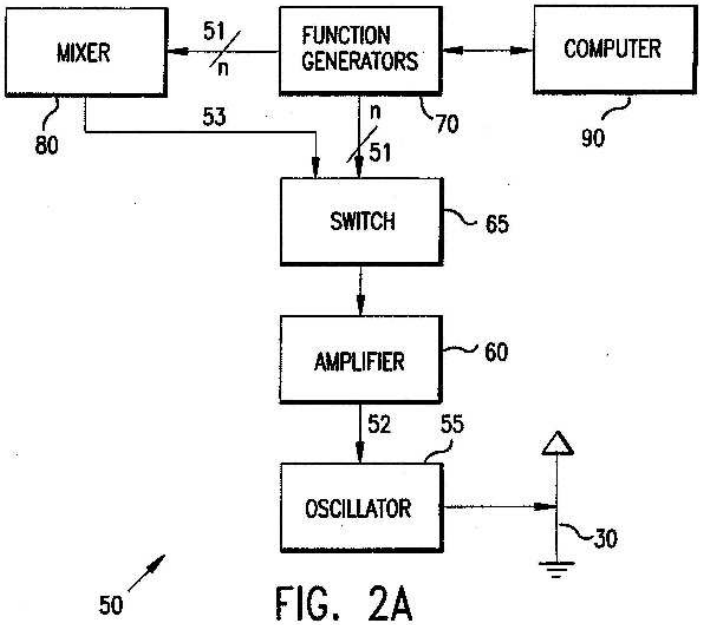

FIG. 2A

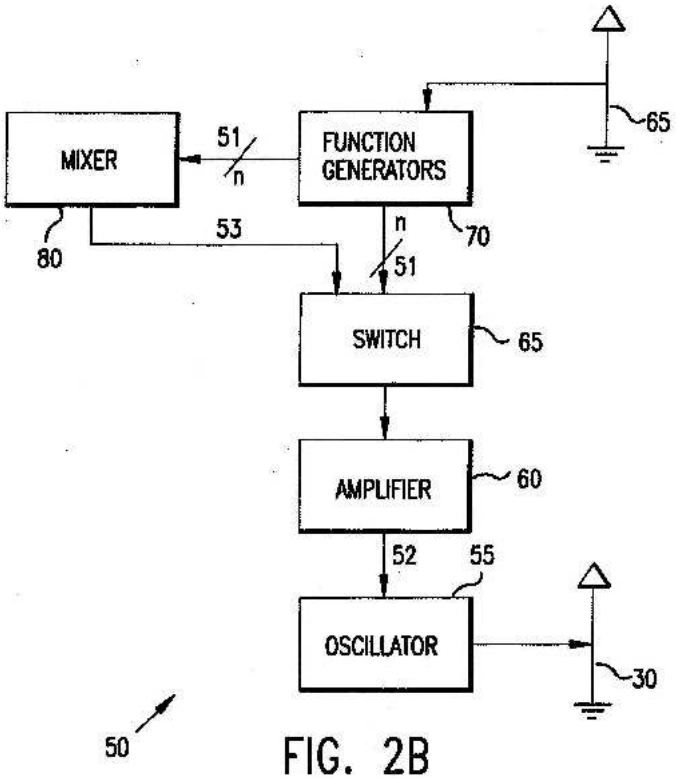

FIG. 2B

FIGS. 3(A) through 3(G) illustrate eight different exemplary signals that can be produced and used within the treatment chamber for therapeutic purposes.

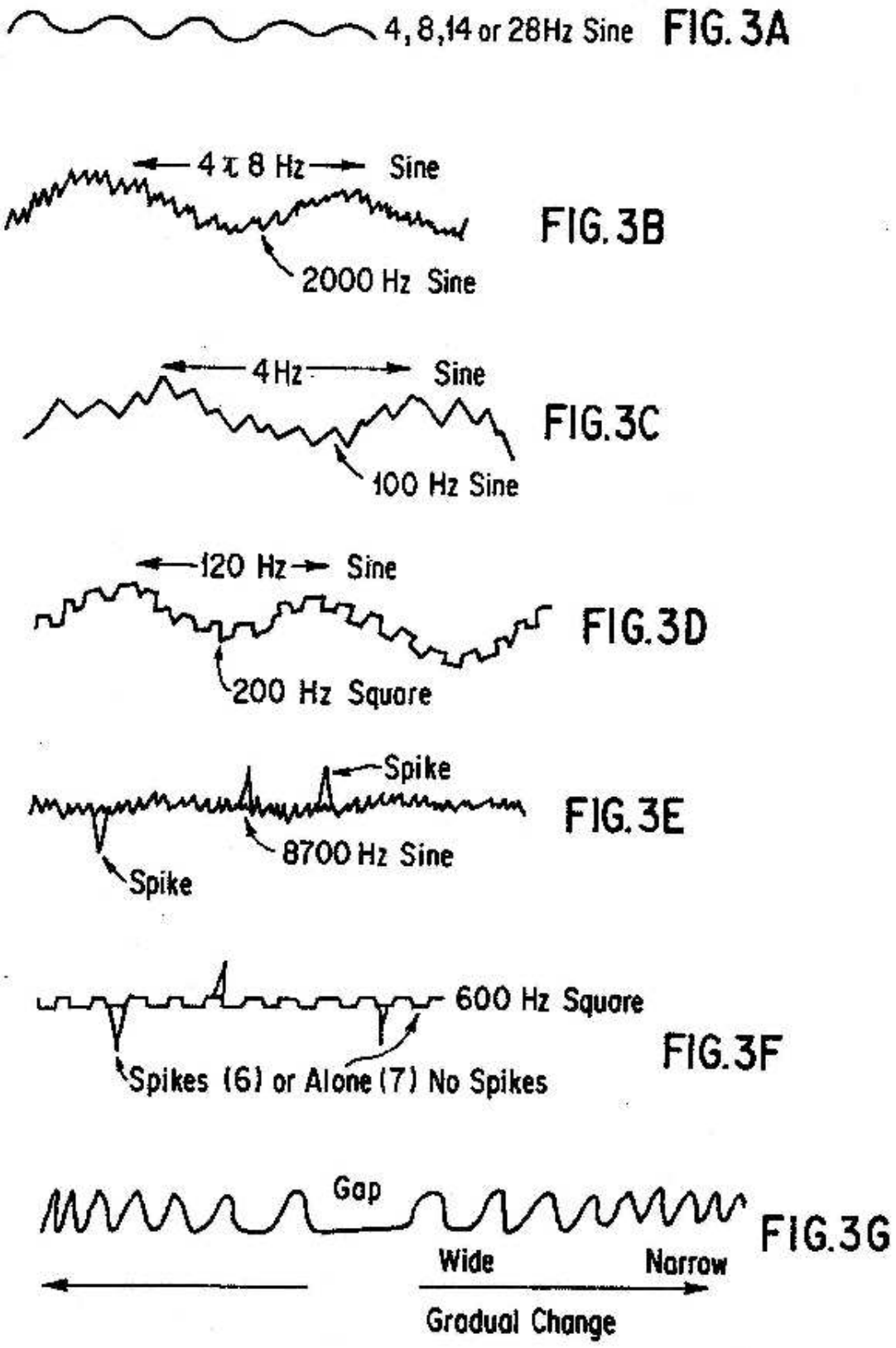

FIG. 4 illustrates a soliton group wave.

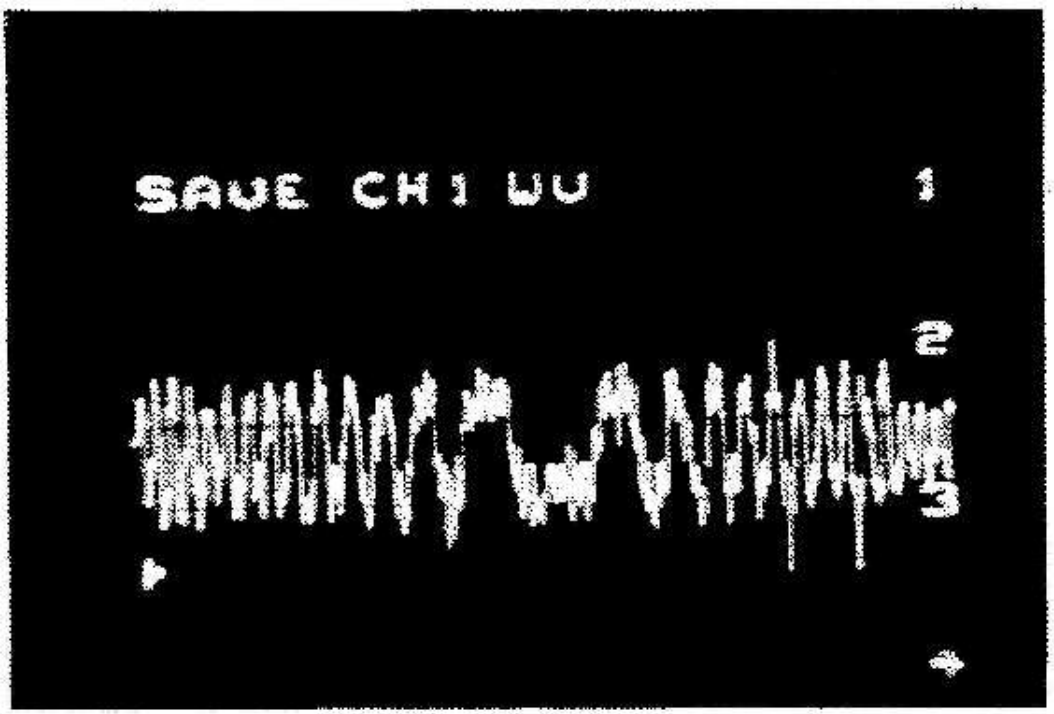

FIG.4A

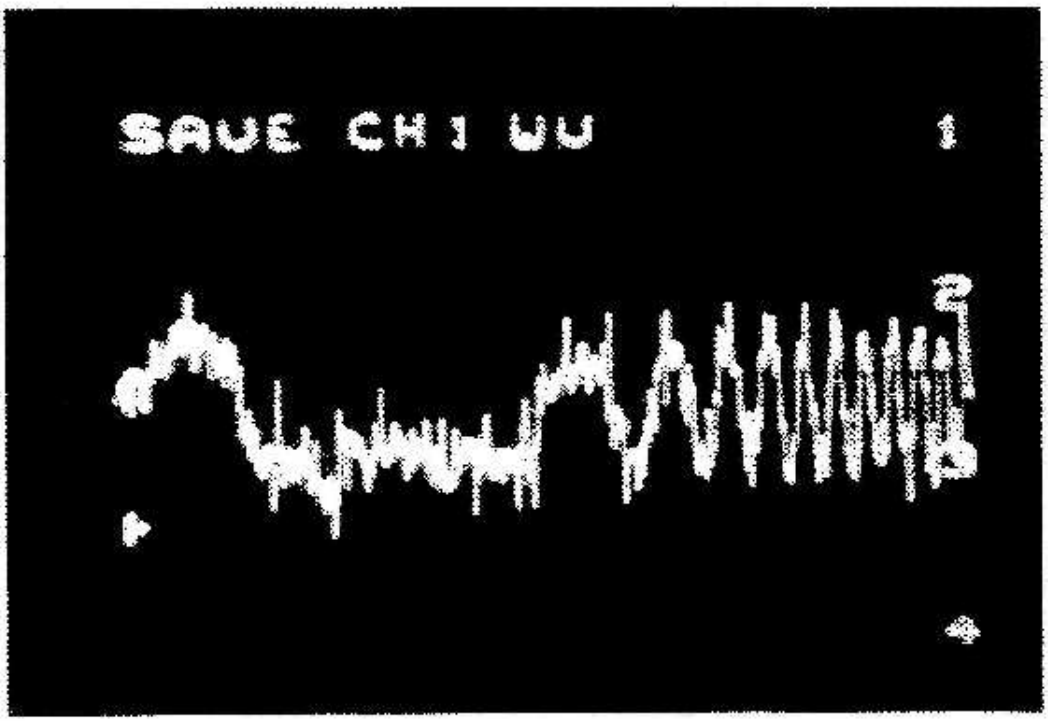

FIG.4B

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Radio waves in the Extremely Low Frequency (ELF) and Very Low Frequency (VLF) region are propagated along the atmospheric boundary layer of the human or mammalian skin, rock surfaces, sod (soil), and plants (in

particular trees). These radio waves occur between 0.5 Hz and 20,000 Hz in the Schumann, electrical anesthesia, and electronic induction portion of the electromagnetic spectrum. Furthermore, these radio waves sometimes show narrow 10,000 Hz to 20,000 Hz narrow sidebands that vary from person to person, plant to plant, etc., due to the health of the living animal or plant, the time of day, and the weather conditions. The highest peak of these emissions occurs at dawn and dusk (i.e. between 0630 to 0930 hrs and from 1830 to 2130 hrs). In other words, these radio waves tend to increase in amplitude during these peak dawn and dusk times.

FIG. 1(A) shows a front sectional view of a treatment chamber 10 constructed in accordance with the present invention. FIG. 1(B) shows a top sectional view of the treatment chamber 10. The treatment chamber 10 is built in a hexagon shape of Navajo hogan design. The treatment chamber can be built to any dimensions so long as a human can comfortably sit in the treatment chamber 10 without making contact with the walls of the treatment chamber 10. A recommended size is 8 feet by 8 feet. In a preferred embodiment, the treatment chamber 10 is made of wooden logs or architect square logs each of which are approximately six inches thick. Wood is used because it is an excellent diamagnetic material (i.e., it is repelled by a magnetic field). In other words, the treatment chamber 10 is constructed from a material that helps insulate the patient sitting in the treatment chamber 10 from outside magnetic forces.

The treatment chamber 10 has a roof 20 constructed from corbled logs and/or wood. The entire treatment chamber 10 is covered with paramagnetic earth (200 centimeter-grams, per second (cgs) or above--cgs defined generally as the amount of time one gram of a material will move towards a magnet placed one centimeter away). The earth mound is sodded with a living grass. The treatment chamber 10 could also be covered with bricks instead of earth so long as the bricks are paramagnetic. In other words, the treatment chamber can be covered by any material that is paramagnetic. The floor of the treatment chamber 10 is constructed from hardened compact clay or earth. The floor is also covered with a wool carpet 95 since wool does not store a magnetic charge.

The configuration of the treatment chamber 10 provides a layered system since the earth covering is paramagnetic and the wood is diamagnetic. In this document the term paramagnetic is defined as a material that is susceptible to magnetism. The material does not store the magnetic force, rather if brought in contact with a magnet it would be drawn towards it. Diamagnetic is the opposite. A diamagnetic material is repelled by a magnet. Diamagnetic materials also do not store a magnetic force.

Experiments by the Applicant in volcanic areas with paramagnetic soil (e.g., Ireland) and in diamagnetic areas with little or no soil (e.g., Upper Amazon) have shown that a combination of a diamagnetic layer (e.g., plant material) and a paramagnetic layer (e.g., volcanic earth or clay brick) tend to focus or concentrate the radio waves (describe below) that are introduced into the treatment chamber 10. It appears that diamagnetic-paramagnetic layers act as a condenser for storing and discharging the ELF and VLF energy.

An antenna loop 30 is imbedded in the wall of the treatment chamber 10. The antenna loop 30 is formed from thin copper wire or of 1/4 inch hemp rope which has been soaked for one day in a sea salt solution. Other materials that could be used to construct the antenna loop would be apparent to a person skilled in the relevant art.

The antenna loop 30 encircles the treatment chamber 10 within a diamagnetic fiberboard wall 40. The antenna loop 30 is spaced with the individual loops one inch apart from floor to ceiling.

The leads from the antenna loop 30 are passed through the fiberboard wall 40 and connected to a wave generator 50. FIG. 2 shows a block diagram of the wave generator 50. The wave generator 50 includes an oscillator 55 (oscillator 55 is also referred to as a function generator), an amplifier 60, an arbitrary function generator 70, a mixer 80, and a computer 90. Each of these components will now be described in detail.

The arbitrary function generator 70 is controlled by the computer 90. The arbitrary function generator 70 is an instrument which generates periodic waveforms that duplicate various types of defined mathematical functions. In other words, the arbitrary function generator 70 is computer programmable to duplicate any known frequency or waveform. Function generators are well known in the art, and for the sake of brevity, the programming and operation of the arbitrary function generator 70 will not be described in detail here. In operation, a user programs the computer 90 to provide a particular waveform to the arbitrary function generator 70. The arbitrary function generator 70 duplicates the waveform provided by the computer 70 and produces waveform S1.

In an alternate embodiment, an antenna 65 is connected directly to the arbitrary function generator 70. As

discussed above, there are a variety of radio waves that are natural to the atmosphere. The present invention is based on the theory that these natural waves, if applied in an amplified form to the human body, can provide therapeutic benefits. Thus, the antenna 65 can be connected directly to the function generator 70, which in turn duplicates the exact waveform of the radio waves that are propagating within the atmosphere. The preferred antenna used for detecting these natural radio waves can be found in a patent application filed Apr. 19, 1993, in the name of Dr. Philip S. Callahan, entitled "Photonic Ionic Cord Detector of Group Waves" U.S. patent application Ser. No. 08/047,486, which is hereby incorporated by reference in its entirety.

The arbitrary function generator 70 is connected to the amplifier 60. Amplifiers are very well known, and for the sake of brevity a detailed description of the amplifier 60 will not be given. The amplifier 60 amplifies the waveform S1 produced by the arbitrary function generator 70. The amplifier 60 produces amplified waveform S2. The amplifier 60 is connected to the oscillator 55 which stabilizes the amplified waveform S2. Note that the amplifier 60 can be connected directly to the antenna 30, but the waveform might not be as stable.

The oscillator 55 is connected to the antenna 30. Thus, the duplicated amplified waveform is provided to the antenna 30. These waveforms are transmitted into the treatment chamber 10 by the antenna 30. It is these waveforms that provide therapeutic benefits.

The waveform S1 can take many forms, including a sine wave or a sine wave riding another sine wave. The first signal S1 is typically a modulated millivolt signal. The modulated millivolt signal is amplified by the amplifier 60 up to volt ranges.

It has been determined by Applicant that the natural radio waves that propagate throughout the atmosphere, as well as the natural waves that propagate along the surface of the human body if amplified and provided to a diseased body can aid in the treatment of diseases or medical ailments. Consequently, it is these natural radio waves that should be duplicated and generated by the arbitrary function generator 70. Some of these waveforms are described briefly below.

FIGS. 3(A) through 3(H) illustrate eight different exemplary waveforms (i.e., radio waves) that can be produced by the arbitrary function generator 70. All eight radio waves occur naturally in the atmosphere or along the surface of the human body. The computer 90 is programmed by a user to generate the desired waveform. Such programming would be apparent to a person skilled in the relevant art based on the following description of exemplary waveforms. As discussed above, this waveform is duplicated by the arbitrary function generator 70. These signals are described briefly below.

FIG. 3A illustrates an unmodulated waveform. The unmodulated waveform can have resonant peaks at 4, 8, 14 or 28 Herts (Hz). FIG. 3B illustrates a modulated 2,000 Hz sine wave carried on a 4 to 8 Hz sine wave. FIG. 3C illustrates a modulated 100 Hz sine wave carried on a 4 Hz sine wave. FIG. 3D illustrates a modulated 600 Hz square wave carried on a 120 Hz sine wave. FIG. 3E illustrates a modulated 8700 Hz sine wave with 20,000 Hz spikes generated and carried randomly along its fixed frequency. FIG. 3F illustrates a modulated 600 Hz grounded square wave with 20,000 Hz spikes generated and carried randomly along its fixed frequency. FIG. 3G illustrates a soliton target or group waves, of a very specific form, varying between 0.5 Hz and 1000 Hz with a band gap of between 1 Hz and 10 Hz in the middle as given in FIG. 4.

A group wave is the sum of many phase waves. For a more derailed discussion of group waves see Brillouin and Sommerfield, Wave Propagation and Group Velocity, Academic Press, New York, 1960. These radio waves have been so named because the varying group wave frequencies modulate a basic phase Schumann wave. Note that Schumann waves vary with geographic region. Since a soliton is a wave riding another wave and the varying group wave between 0.5 Hz to 170 Hz is superimposed (frequency modulates) on the standard geographical Schumann wave. The soliton is considered by Applicant to be a special sum group (sometimes called target waves) of the natural unpolluted atmosphere. (See Allowiz and Segur, Solitons and Inverse Scattering Transform, Siam Publishers, Philadelphia, 1981.) The radio group soliton waves have recently been discovered by Applicant in nature. In a preferred embodiment, the wave generator 70 is programmed by computer 90 to duplicate and generate the soliton group wave (see FIG. 4) since Applicant believes this wave provides the most beneficial therapeutic effects.

The amplifier 60 may be connected to a plurality of arbitrary function generators 70 each producing a different waveform S1. A first switch 65 is provided so that one of the signals S1 or a mixed signal S3 can be selected and

fed into the amplifier 60. A second switch (not shown) is provided to allow multiple waveforms S1 to be input into the mixer 80.

The mixer 80 is capable of producing a variety of different signals that are deviations from the waveforms S1. Note that if the mixer 80 is used the first switch (not shown) does not select a waveform S1 from the arbitrary function generators 70. The mixer 80 emits single or mixtures of the duplicated waveforms emitted by the arbitrary function generators 70. This mixed waveform is labeled S3. The emitted waveform S3 from the mixer 80 is provided to the amplifier 60. Note that the signals from the arbitrary function generators 70 do not have to pass through the mixer 80. Rather the signals from the arbitrary function generator 70 can be, and most frequently are, passed directly to the amplifier 60.

The treatment chamber 10 should be located at least 1/2 mile from an AC power source (60 Hz or greater). The wave generator 50 should be DC battery operated.

The preferred means for the patient to absorb the therapeutic frequencies is to sit in the center of the treatment chamber 10 without contacting the surrounding loop antenna (i.e., without contacting the surrounding walls of the treatment chamber). Thus, only the atmospheric-skin boundary frequencies emitted by the loop antenna 30 are absorbed by the patient. The wave generator 50 is tuned depending on the specific therapeutic treatment. The tuning of the wave generator 50 is based on previously proven wave forms (see Ehrmann cited above), or by experimentation.

In short, the treatment chamber 10 is imitating nature but in a more amplified manner. By providing an environment that contains an atmosphere that is saturated with amplified radio signals that are natural (i.e., propagate within the earths atmosphere or along the surface of the human body), the patient can obtain a significant therapeutic benefit.

An alternate method of using the teachings of the present invention is to feed the radio waves that are output from the antenna 30 directly into the human body by grounding the feet and placing the antenna lead in one hand of the patient.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

Photonic ionic cloth radio amplifier
US5247933

A method and apparatus for detecting radio waves that propagate along the atmospheric boundary layer of human skin. This function is realized with the use of a photonic cloth constructed of flax and wool, soaked in a saline solution and air dried, and subsequently placed upon the human skin. The radio waves can then be monitored by connecting the photonic cloth via a set of probes to an oscilloscope.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a method and apparatus for detecting the radio frequencies that propagate along the atmospheric boundary layer of human skin.

2. Discussion of Related Art

The present invention described herein is based on the early work of Snape, d'Arsonval, Rabinovitch, and Leduc. In particular, Snape pioneered the use of extremely low radio frequencies (ELF) as an anesthetic in dental extraction (Snape, J., On electricity as an anesthetic in dental extractions, Trans. Odont. Soc. Gr. Brit., pp. 287-312. (1869)). Subsequently, in 1890, Arsine d'Arsonval demonstrated that ELF pulsed electrical currents, ranging

from 2500 Hz to 10,000 Hz, induced general anesthesia in humans. Similarly, in 1902, Leduc demonstrated that a pulsed electrical DC current applied to the central nervous system could effectively induce anesthesia. Robinovitch did extensive work in the area of electric analgesia sleep and resuscitation (Robinovitch, L. G., Electric Analgesia Sleep and Resuscitation Anesthesia (chap. XVI), ed. J. T. Gwatheny. D. Appleton & Co., New York, pp. 628-643 (1914)). More recently, Czaja demonstrated that treatment in the ELF frequency range enhances the immune system (Czaja, W., Comparative Studies of Electroanalgesia and Barbiturates, Polski Archivum Weterynaryjne, pp. 205-224 (1986)).

Between 1965 and 1973 applicant demonstrated that antennae sensilla on insects act as photonic waveguides to collect and transmit infrared frequencies. From this early research, applicant postulated that living systems (e.g., insect spines and plant fibers) also utilize the radio portion of the frequency spectrum to energize photons from radio and infrared emitting molecules. The requirement for detecting and or stimulating infrared and radio emissions from living systems is the ELF modulation of the organic and gaseous interface located at the waxy surface of the system. That is, living systems store coherent photon emissions from the external environment which become part of the self-organization of the living system. It has been demonstrated that ELF frequencies in living systems range from 10@3 Hz in nerve action potentials to 10@-2 Hz for physiological functions.

From this prior research, applicant has determined that radio waves in the ELF region of the radio spectrum are propagated along the atmospheric boundary layer of the human skin. ELF in the range of 800 Hz to 5200 Hz averaging 1000 Hz, with narrowband 10,000 Hz to 150,000 Hz sideband ELF radio signals are natural to the skin surface. The 700 Hz to 10,000 Hz region of the frequency spectrum is the region of so called radio "whistlers" (i.e. radio signals) from atmospheric lightning strikes around the world. It is this atmospheric electricity that modulates the frequencies from the atmospheric boundary layer of the skin. These modulation frequencies are equivalent to the 3 Hz to 10 Hz oscillations discovered by Schumann stimulated by lightning. These flicker modulations (which are approximately 3 Hz to 6 Hz) can be observed on an oscilloscope while measuring the 1000 Hz and 10,000 sidebands present on the human skin.

FIGS. 1, 2 and 3 of the appended drawings are readings of an oscilloscope showing the radio signals in the 700 Hz to 10,000 Hz portion of the ELF radio spectrum that are emitted from normal, healthy human skin. These signals were detected by touching the oscilloscope probe to the photonic ionic cloth radio amplifier and touching the face of a cathode ray tube with the hand. A battery (DC) operated 222 Tekronix hand held digital storage oscilloscope and capacitance coupling, with no AC interference, was used for detecting these frequencies in this manner. At a 5 mV range and a 1 mS sweep time the amplitude ranges from 1/2 mV (weak signal) to 30 Mv (strong signal).

The oscilloscope sweep shown in FIG. 1 has approximately two main 1000 Hz frequencies (between approximately 800-1200 Hz), shown at C1 and D1, which are 180 DEG out of phase and occur exactly 8.4 Ms apart. At high amplitudes the two main broad band frequencies generate a series of narrow sidebands of approximately 10,000 Hz, shown in FIG. 1 between A1 and B1. The 10,000 Hz sidebands are emitted when the two main 1000 Hz frequencies reach an amplitude of 15 Mv or higher. As shown in FIG. 2, there may be as few as one sideband, as shown at A2, to as many as fifteen sidebands. At extremely high amplitudes there is a main band frequency splitting. As few as one sideband to as many as eight sidebands emit from the region of the 1000 Hz signal under such high amplitude conditions. FIG. 3 shows an example of an oscilloscope sweep at an extremely high amplitude, having two sidebands, shown at A3 and B3.

BRIEF DESCRIPTION OF THE INVENTION

These and other advances concerning electricity and its effect upon living systems, as well as the discovery that radio waves in the ELF region are propagated along the atmospheric boundary layer of the human skin are utilized by the present invention. The present invention includes a method and apparatus for detecting the radio frequencies that propagate along the atmospheric boundary layer of the human skin. This function is realized with the use of a photonic cloth constructed of flax and wool which is soaked in a saline solution and air dried, and subsequently placed upon the human skin. When the photonic cloth is placed in contact with the skin it has an electroanesthesic effect on the body.

BRIEF DESCRIPTION OF THE DRAWING AND SPECTRUM

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of the preferred embodiments of the invention, as illustrated in the accompanying

drawings in which:

FIG. 1 is an oscilloscope recording showing the ELF radio signals that are emitted from normal human skin;

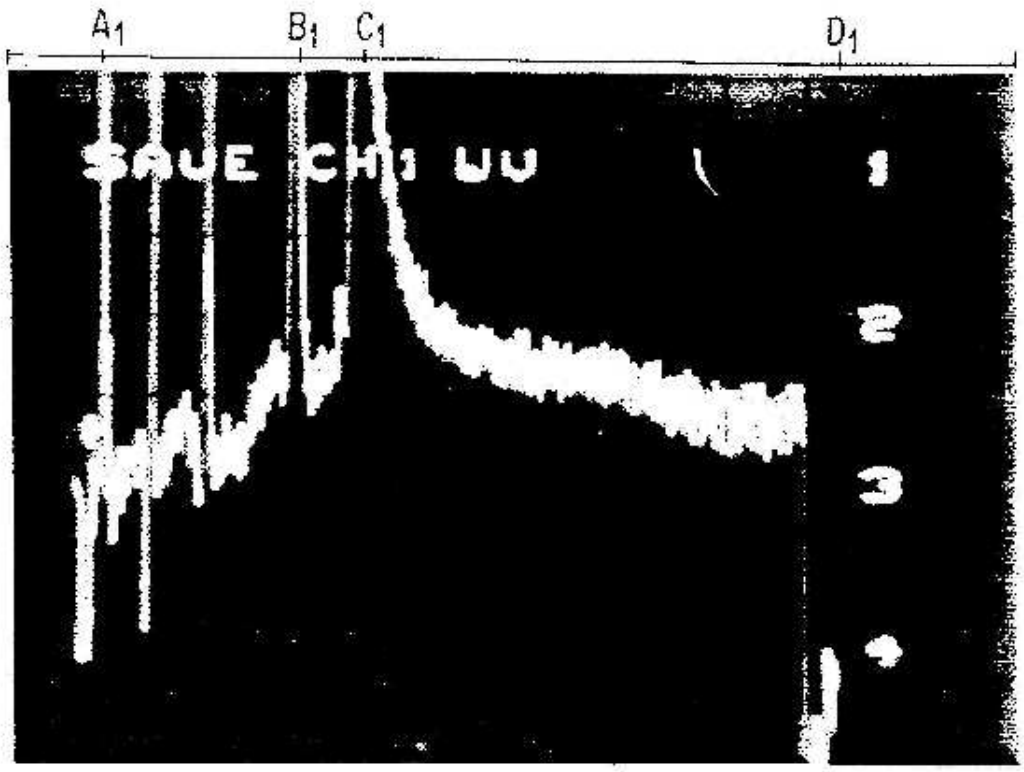

FIG. 1

FIG. 2 is an oscilloscope recording showing the potential for ELF radio frequencies to have a single sideband;

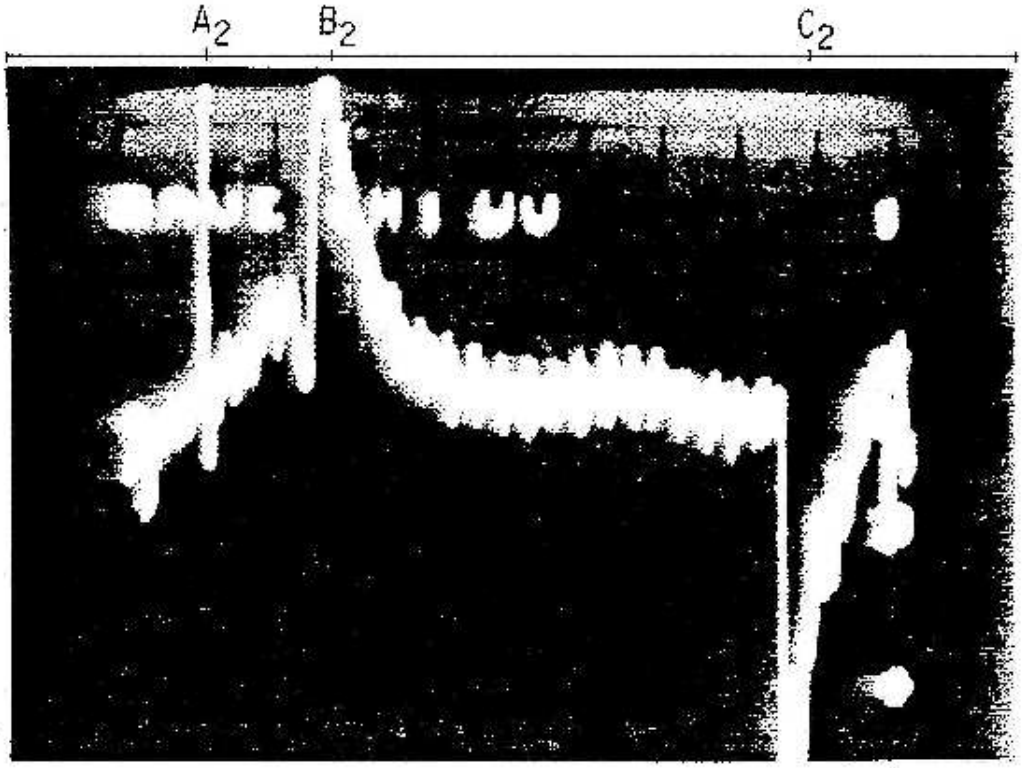

FIG. 2

FIG. 3 is an oscilloscope recording showing the potential for ELF radio frequencies at extremely high amplitudes to have a single sideband.

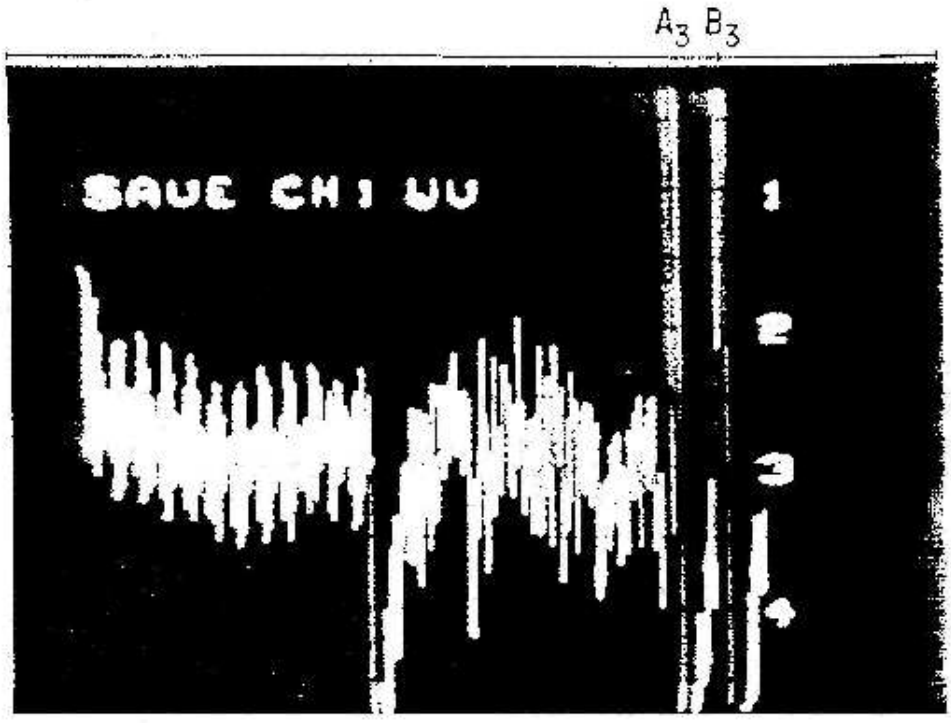

FIG. 3

FIG. 4 is a perspective diagram of a woven photonic cloth of the present invention;

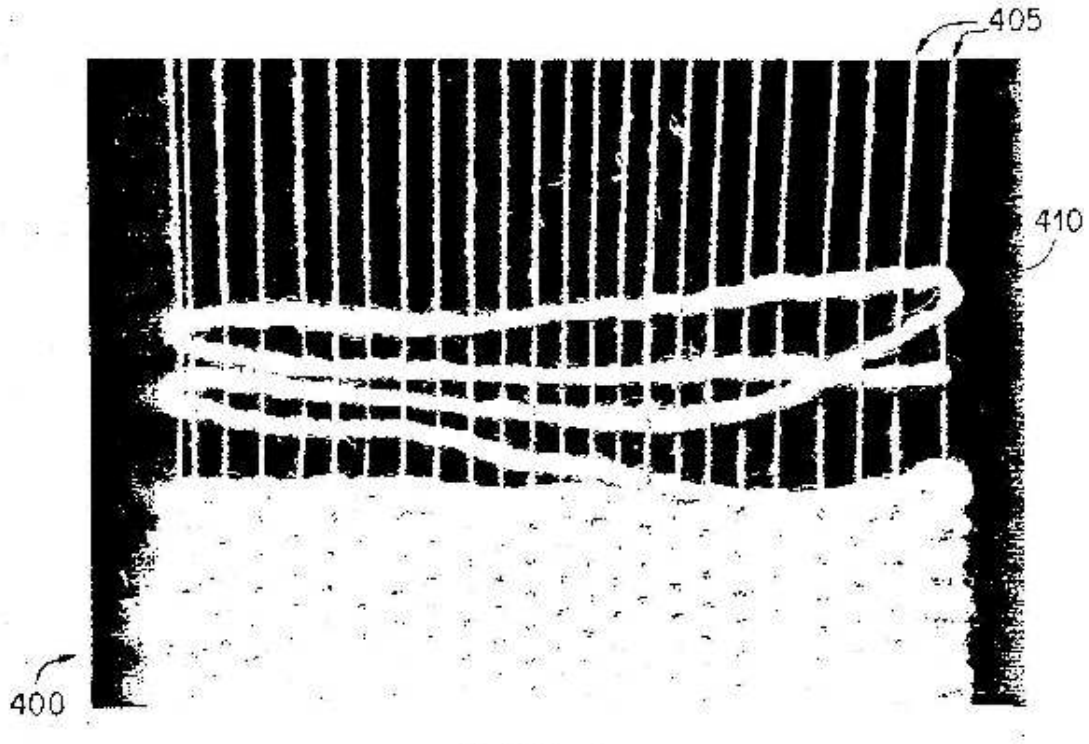

FIG. 4

FIG. 5 is an oscilloscope recording taken from a piece of woven photonic cloth soaked in saline solution;

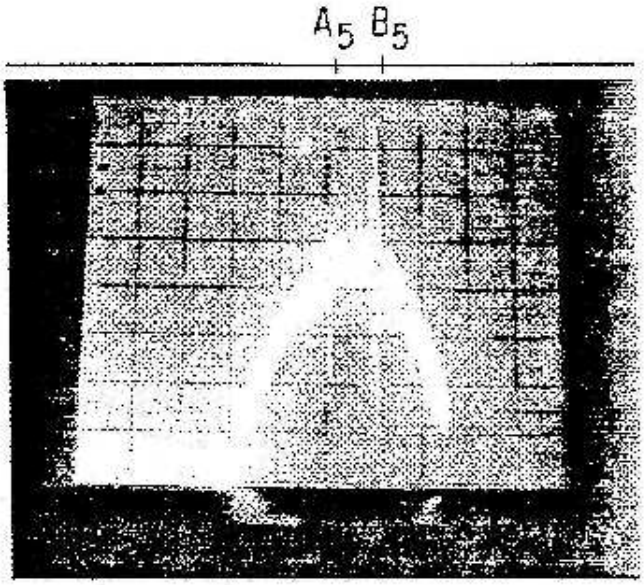

FIG. 5

FIG. 6 is a magnification of the recording shown in FIG. 5;

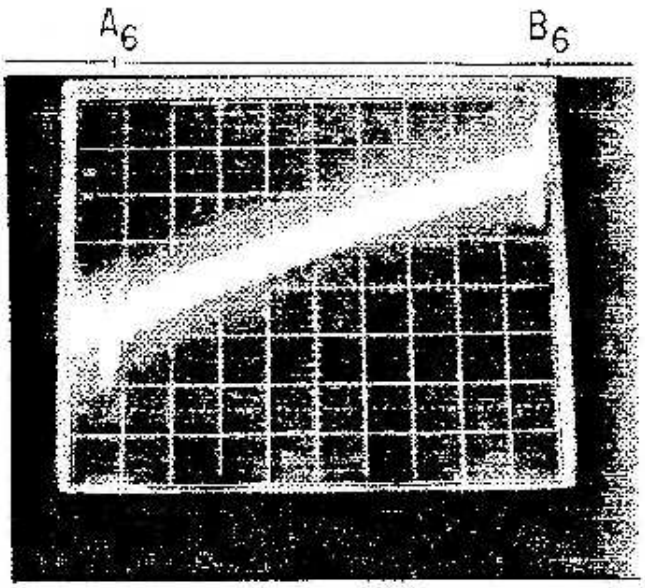

FIG. 6

FIG. 7 is a magnification of the recording shown in FIG. 6 showing the details of the first 1000 Hz frequency;

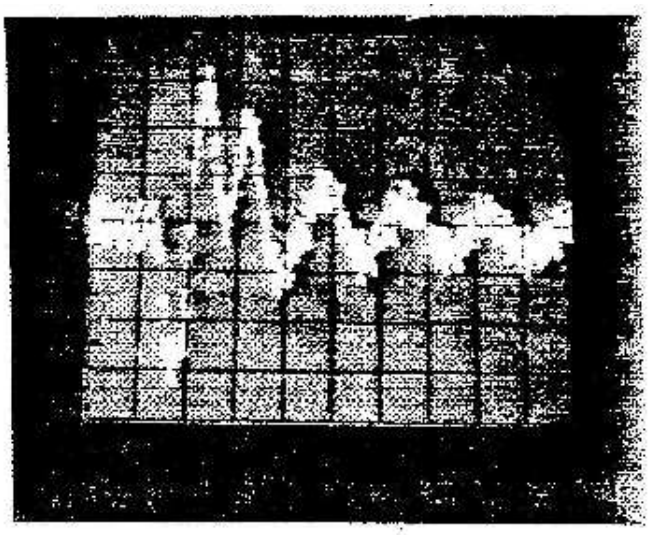

FIG. 7

FIG. 8 is a magnification of the recording shown in FIG. 6 showing the details of the second 1000 Hz frequency;

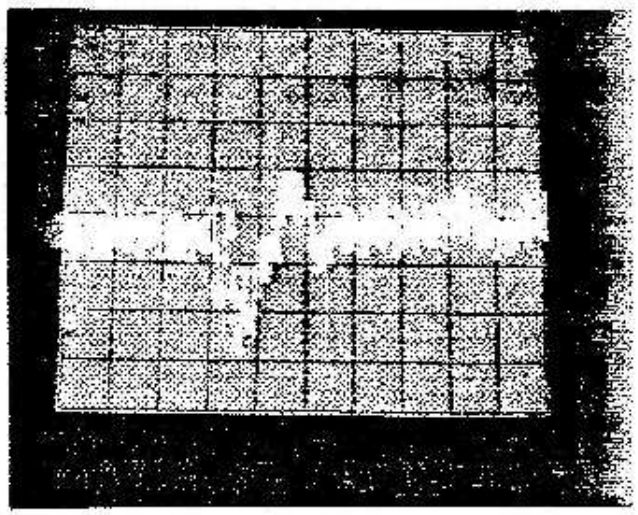

FIG. 8

FIG. 9 is an oscilloscope recording taken from a 6 inch by 15 inch woven photonic cloth with the right hand of a lab assistant held approximately one foot from the cloth and the left thumb capacitance coupled to an oscilloscope;

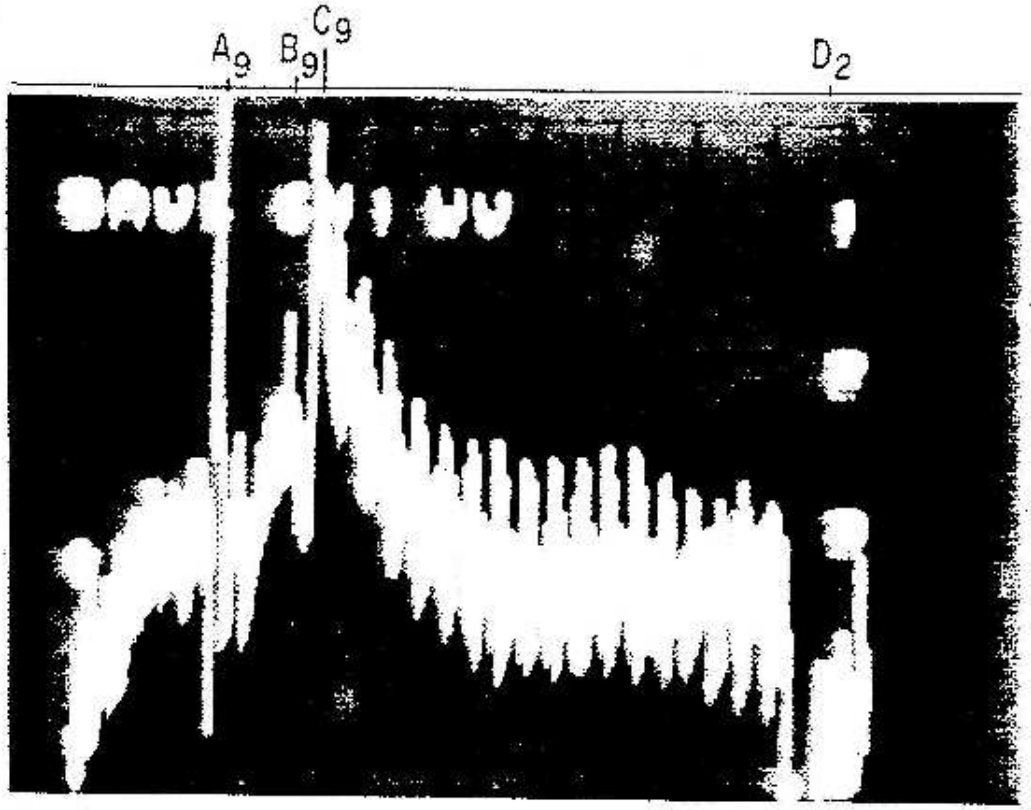

FIG. 9

FIG. 10 is an oscilloscope recording taken from a 2 inch by 6 inch knitted photonic cloth with the left hand of a lab assistant touching the cloth and the right thumb capacitance coupled to the oscilloscope;

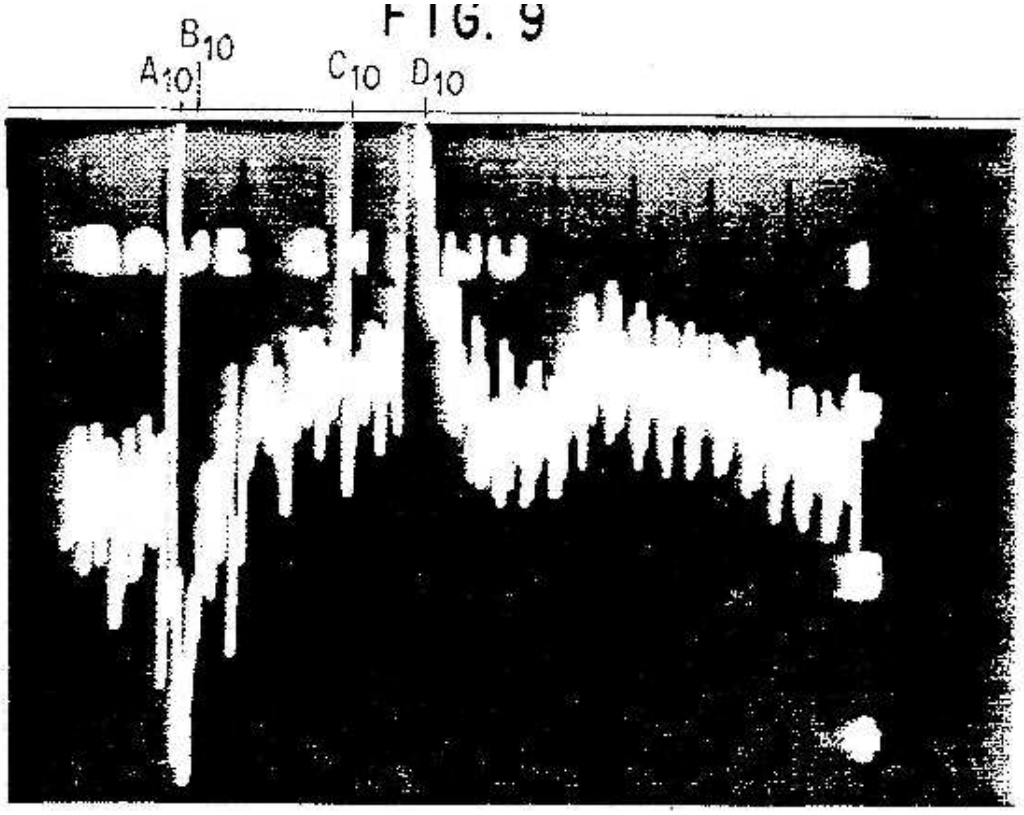

FIG. 10

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIGS. 1, 2 and 3, radio waves in the ELF region are propagated along the atmospheric boundary layer of the human skin. In particular, 1000 Hz (between approximately 800 Hz to 5200 Hz) and narrowband 10,000 Hz to 150,000 Hz sideband ELF radio signals are natural to the surface of the skin of the human body. The narrow sidebands vary from person to person (e.g., due to the health of the person), time of day and weather conditions, although the 1000 Hz and 10,000 Hz sidebands are continuously emitted from the skin's atmospheric boundary layer. The highest peak of these emissions occurs at dawn and dusk (i.e. between 0630 to 0930 hrs and from 1830 to 2130 hrs). The 1000 Hz and 10,000 Hz sideband frequencies can be detected, and amplified, by the photonic ionic cloth of the present invention.

Referring to FIG. 4, one embodiment of the photonic cloth of the present invention is shown generally at 400. Photonic cloth 400 is constructed as a plain weave, comprising warp yarns 405 made of flax and weft or filling yarns 410 made of wool. Each warp yarn is a single yarn, while each filling yarn consists of three smaller yarns combined to form a single yarn. The flax used to form yarns 405 is natural and untreated (i.e., Linum usitatissimum). Similarly, weft yarns 410 should be made from natural, untreated wool. Thus, both the flax and wool should be unblended and unwashed so that the lanolin remains in the wool, and the waxy outer layer remains on the flax. The natural flax acts as a dielectric waveguide (i.e. it is photonic) due to its waxy characteristics. Although one yarn of flax is sufficient as warp yarns 405, experiments have shown that two or more yarns in combination will also detect and generate the 1000 Hz and 10,000 Hz sideband frequencies.

The photonic cloth can be any size. However, in the preferred embodiment of the present invention, cloth 400 is approximately two inch by six inch to six inch by fifteen inch. In the alternative, the cloth could be woven as a belt approximately three inch by forty-eight inch long.

In addition to weaving, the cloth could be knitted using any known technique utilizing natural and unblended flax as the warp yarns and natural and unblended wool for the filling.

To enhance the ability of the cloth to stimulate and/or detect the radio emissions from the skin surface, it is soaked in a saline solution for approximately one to six hours and then air dried until it is just slightly damp. The saline

solution preferably consists of an isotonic aqueous solution containing a borate buffer system and sodium chloride, preserved with 0.1% of sorbic acid and disodium (EDTA). An alternative is to use four tablespoons of sea salt per 1/2 pint of water with the same borate buffer as described above. Ocean or sea water could also be used. The saline content in the damp cloth acts as an ionic detector for the radio energy emitted from the human skin. In particular, the hollow and fanshaped (i.e., branched) wool fibers act as an insulator, storing and feeding moisture to the waxy flax which absorbs the salt and thus becomes a photonic waveguide detector. Furthermore, the wool acts a condenser by keeping the system electrically charged above what it would be charged if the cloth was made of saline treated flax alone. Thus, the cloth should be kept slightly damp during use. In order to maintain this slight dampness, the cloth may be placed between two polyethylene layers or their equivalent and sealed to retain the slight moisture. It is important to maintain the cloth in a slightly damp condition, because if the cloth is completely dry or very damp the cloth will not function properly.

Turning now to FIG. 5, an oscilloscope recording taken at 0702 from a piece of saline-soaked, air dried woven photonic cloth is shown. This reading was taken with a 2214 digital storage oscilloscope at 1.times. magnification and 10.times. amplitude. The woven photonic cloth was soaked in saline solution for three hours and dried for six hours. FIG. 5 shows two 1000 Hz frequencies, shown at A5 and B5, which are 8.4 Ms apart, and riding an AC interference. FIG. 6, which is a magnification of the recording shown in FIG. 5 (taken at 0710, at 10.times. magnification and 10.times. amplitude), shows the two 1000 Hz frequencies, shown at A6 and B6, with peak to peak separation. FIG. 7 is a magnification of the details of the first 1000 Hz frequency shown at A6 in FIG. 6. The recording in FIG. 7 was taken at 0725 at 50.times. magnification and 10.times. amplitude. FIG. 8 is a magnification of the details of the second 1000 Hz frequency shown at B6 in FIG. 6. The recording in FIG. 8 was taken at 0720 at 50.times. magnification and 10.times. amplification. The oscilloscope used to make the recording shown in FIGS. 5, 6, 7 and 8 was set at a 5 Mv range with a 1 Ms Sweep. The oscilloscope sweep shown in FIG. 8 demonstrates that the human body acts as an antenna to transmit the E field back and forth across space as an ELF radio wave. The ELF radio signals are capable of penetrating six layers of human skin (approximately 1/4" each), two feet of stacked fabric, and 2" of solid rock, with no attenuation whatsoever.

Referring now to FIG. 9, an oscilloscope sweep is shown which was taken from a six inch by fifteen inch sample of saline-soaked photonic woven cloth with one hand of a test person held approximately one foot from the photonic cloth and the thumb capacitance coupled to the 222 Tekronix digital storage oscilloscope at the cathode ray face. Two 1000 Hz frequencies are shown at C9 and D9 8.4 Ms apart. Both 1000 Hz frequencies have two 10,000 Hz sidebands. An example of a pair of 10,000 Hz sidebands is shown at A9 and B9. Similarly, FIG. 10 shows an oscilloscope sweep taken from a two inch by six inch knitted piece of saline-soaked photonic cloth with the thumb capacitance coupled to the cathode ray face and the hand of the tester directly touching the cloth. The oscilloscope sweep shown in FIG. 10 demonstrates that with the body of the tester directly touching the photonic cloth, there is a tremendous increase in the amplitude of the 1000 Hz and 10,000 Hz sidebands signal, as opposed to the oscilloscope sweep shown in FIG. 9. The first main 1000 Hz signal shown at B10 has one sideband signal of 10,000 Hz shown at A10 ; the second main signal shown at D10 also has one sideband signal of 10,000 Hz shown at C10.

When the photonic cloth is placed against the human skin, the radio energy between the skin and the cloth are coherent. The photonic cloth has spacial coherence because the antenna aperture is zero. The 1 Ms sweep and fixed position of the waves demonstrate that there is temporal coherence as well. Furthermore, because the signal reaches an extremely high amplitude when the photonic cloth touches the skin, the signal also becomes a phase conjugated signal.

While the invention has been particularly shown and described with reference to preferred embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made therein without departing from the spirit and scope of the invention.

Insect antenna vibrating frequency modulator and resonating maserlike IR emitter US3997785

A system or method by which electromagnetic wave energy in the near, intermediate, and far infrared portion of spectrum from insect sex scent attractants and host plant or animal scent attractants is converted into narrow band

high intensity maserlike infrared emissions is disclosed. The system or method includes a low frequency oscillator for vibrating a silver or gold coated or aluminum low emissivity reed in a vacuum chamber with a suitable infrared window (1 to 30 mu m). The reed vibrator is prepared with a monomolecular layer of suitable insect sex or host attractant or surrounded by vapors of said attractants and vibrated (modulated) in an infrared source of electromagnetic energy at 1 to 30 mu m and at the antenna vibrating frequency of the insect. The narrow band maserlike emission and harmonies thereof are emitted through the IR window and detected by a spectrometer.

PRIOR ART AND BACKGROUND OF INVENTION

It has long been known that insects are attracted to specific molecules of sex attractants. The isolation of sex and host plant attractant molecules has progressed steadily over the past three decades. The electromagnetic dielectric antennae theory of insect sensing by means of resonating pits was put forth by Grant in 1948 (Grant, G. R. M. The Sensory Pits of Insects Considered As Dielectric Waveguides and Resonators to Infrared Rays. Proceedings of the royal Society of Queensland 60 (8): 89-98, 1948). Callahan elaborated on a similar theory in 1965 (Callahan, P. S., Intermediate and Far Infrared (FIR) Electromagnetic Theory of Communication and Sensing in Moths and Its Relationship to the Limiting Biosphere of the Corn Earworm, Annals of the Entomological Society of America 58 (5): 727-745, 1965), (Callahan, P. S., Far Infrared Emission and Detection by Night Flying Moths, Nature 207 (4989:1173, 1965), (Callahan, P. S., A Photoelectric-photographic Analysis of Flight Behavior in the Corn Earworm Moth, Heliothis Zea, and Other Moths, Annals of the Entomological Society of America 58(2): 159-169, 1965) and presented a theoretical model of the insect spine sensilla as dielectric wave guides and or resonators in the 1 to 30 .mu.m infrared region. He then postulated the emission of narrow band "maserlike" luminescence emissions from sex scents in the intermediate and far IR water vapor windows. Subsequently, he demonstrated with electrophysiological techniques the detection of modulated narrow band electromagnetic energy by an insect antenna. Work continues in the detection of these theorized infrared maserlike emissions in the 2 to 5 .mu.m, 7 to 14 .mu.m, and 17 .mu.m and 26 .mu.m microwindows. A Fourier analysis spectrometer is used to detect and plot the narrow band maserlike emissions and/or reflections.

The theory, method and apparatus were proved out in the laboratory as shown by FIGS. 1, 2, and 3.

OBJECTIVES

It is the object of this invention to provide a system or method for the attraction of insects. More specifically, it is the object of this invention to provide a system of attracting insects or jamming infrared frequencies from insect scents, using the optimum infrared portion of spectrum from insect sex scent attractants and host plant or animal scent attractants and converting into narrow band high intensity maserlike infrared emissions. Another object of this invention is to emit narrow band maserlike emissions and harmonics through the IR window and detect them by a spectrometer.

It is yet another object of this invention to show that the wave properties of an insect sex or host scent are propagated forward through the 1 to 30 .mu.m infrared window.

Other objects and advantages of this invention will further become apparent hereinafter.

DESCRIPTION OF THE INVENTION

FIG. 1, is a chart of Spectrum (1) taken from a monomolecular layer of cabbage looper pheromone on a reed vibrated at the maximum and minimum cabbage looper antenna vibrating frequency of 55 and 42 cps, respectively.

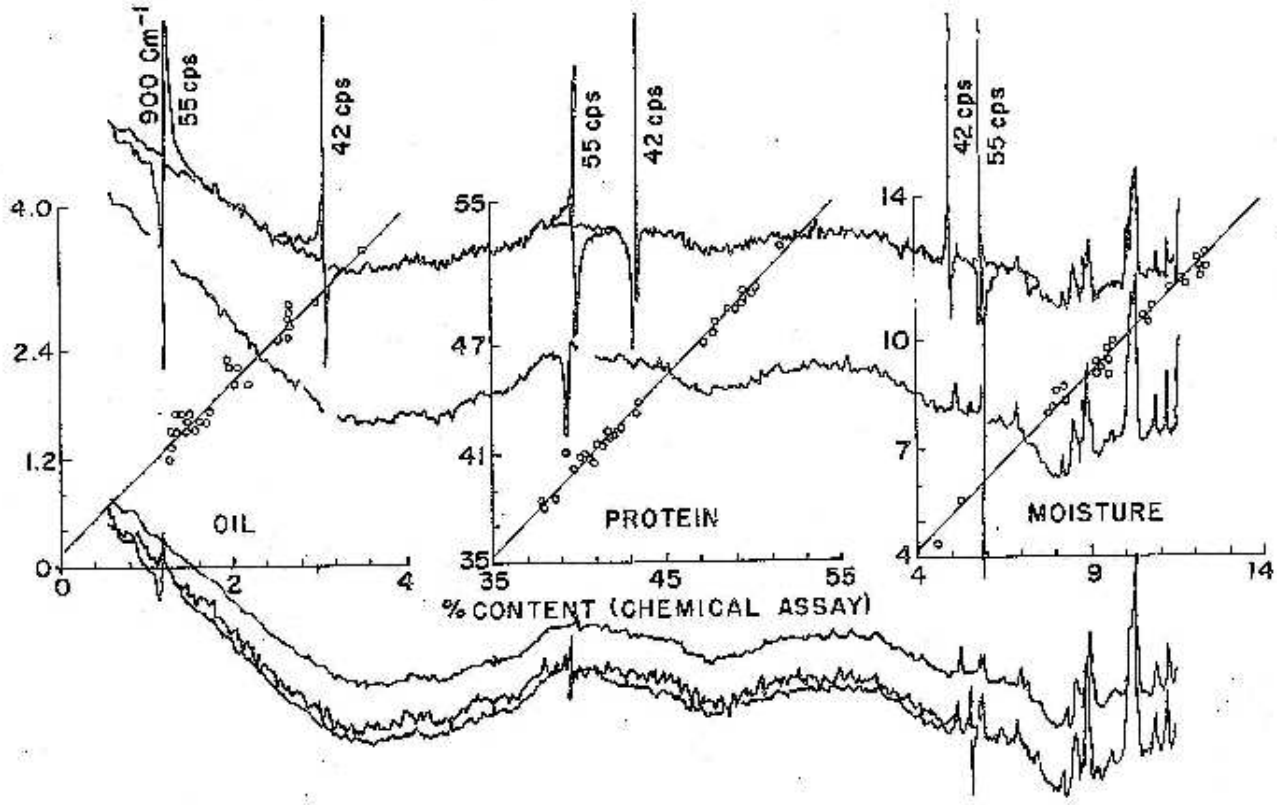

FIG. 1

FIG. 2, is a chart of Spectrum (2) which is a high intensity emission from a vapor of the attractant of Plecia nearctica (the lovebug). The formaldehyde attractant vapor is vibrated at the lovebug antenna vibratory frequency of 128 cps. Two side bands 20 cm@@-1 on either side of the strong narrow maserlike emission are evident in this spectrum.

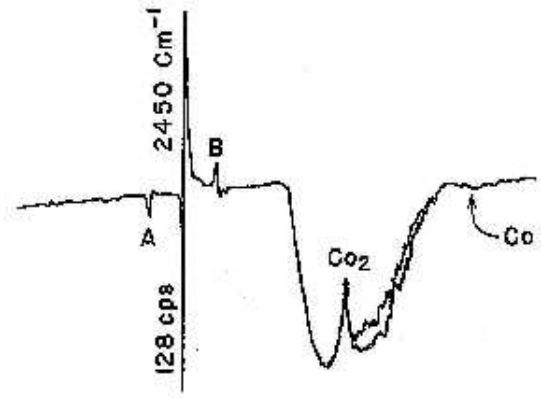

FIG. 2

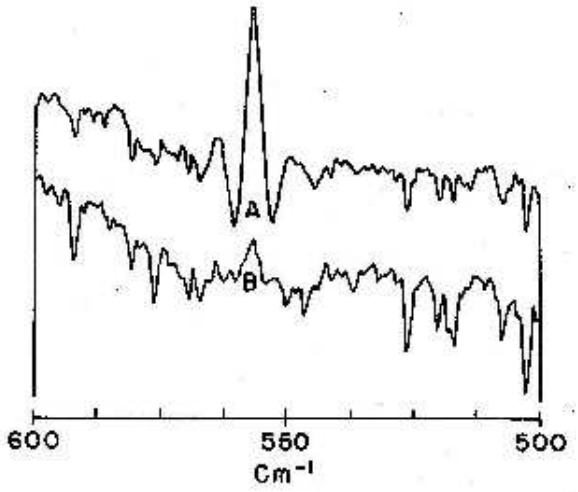

FIG. 3

FIG. 3, is a chart of Spectrum (3) which is a low intensity emission from a thick "monomolecular" layer of the cabbage looper pheromone without vibrating (modulating the pheromone (b) and high intensity emission attained with this modulation system (a).

FIG. 4 is a perspective diagram illustrating one embodiment of the invention particularly adapted for stimulating the maserlike IR emissions from insect sex scents (pheromones) or other insect host attractants.

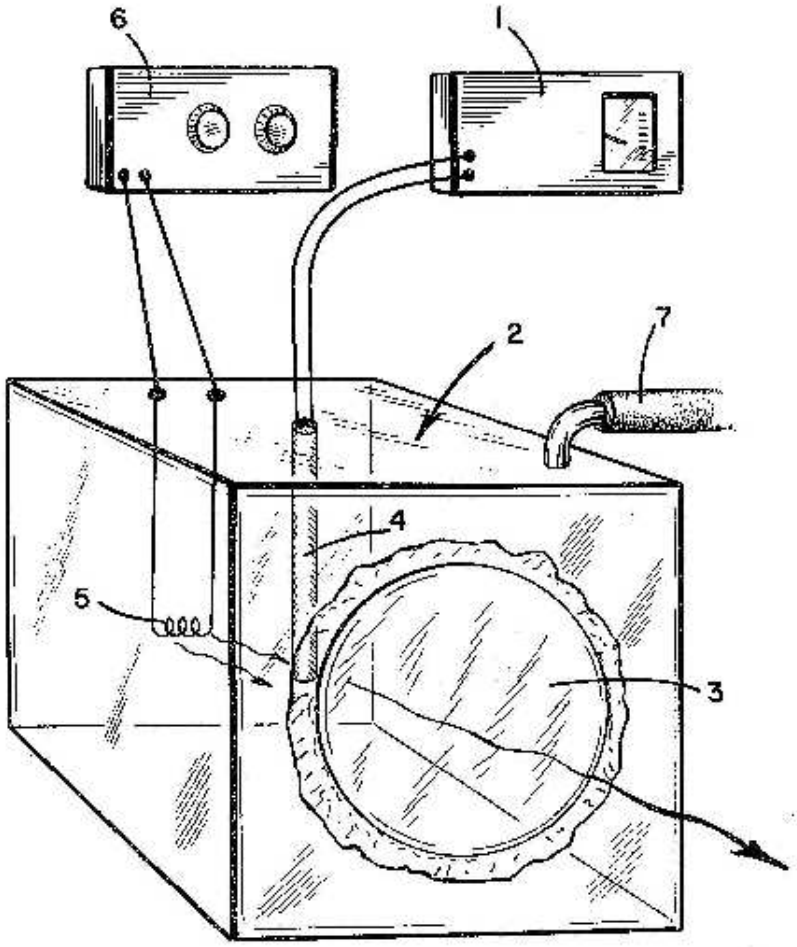

FIG. 4

Referring now to FIG. 4, the wave properties of an insect sex or host scent are propagated forward through infrared window 3 which is 1 to 30 .mu.m. Said window is in the center of a vertical side of cube 2. Cube 2 is one inch cubed, but can be any multiple thereof, and substantially forms a chamber. A bulb of similar diameter can also serve adequately as a chamber. The chamber can be constructed from or blown from glass. A three-quarter inch diameter innfrared window 3 (1 to 30 .mu.m transmittance) of suitable window material and 2 to 5 .mu.m thin is sealed in window 3 of cube 2. Cube 2 is evacuated of air to approximately one-half room atmosphere and 50 percent relative humidity by pin of air outlet 7 which is connected to an external evacuation means (not shown). At the center of cube 2 or approximately 1/2 inch behind the 1-30 .mu.m IR window, a silver or gold or aluminum reed vibrator 4 is positioned so that it bisects the center or lies along the edge of the 1 to 30 .mu.m IR window. Reed 4 is one-sixteenth of an inch wide and three-quarters of an inch long or may be a 250 .mu.m diameter steel pin. Said reed or pin is coated with a monomolecular layer (single layer) of a suitable insect sex attractant (pheromone) or host plant attractant or the chamber is filled with vapors of said attractant. The inside of the chamber and/or bulb is painted with a silver reflective coat. Vibrating reed or pin 4 is connected through the sealed cube and/or bulb to a low frequency oscillator 1 with an adjustable duty cycle of from 5 to 700 cycles per second. Approximately 1/2-inch behind the reed vibrator and centered in front of the back mirrored surface of the cube and/or bulb, and in the center of the front of the 1 to 30 .mu.m IR window is a tungsten filament heating element 5. The heating element is wired through the partially evacuated cube or bulb to an adjustable heating unit 6 variable from 300 to 1000 K (absolute) temperature. In place of the variable temperature source 5 and in the same position a 1 .mu.m emitting diode or other suitable coherent diode (1 to 30 .mu.m) may be substituted as an energy source. For certain insect sex or host scents the 1 .mu.m or other IR wavelength emitting diode is preferable.

The infrared energy from the adjustable temperature filament 5 and/or coherent diode is focused by the surrounding silver coated cube and/or bulb onto the monomolecular layer coated or vapor surrounded reed vibrator.

The monomolecular layer and/or vapors of a suitable insect pheromone or host attractant is stimulated to emit by reproducing the vibrating frequency of the antenna of the insect from which the pheromone was obtained and/or the host attractant of the insect. The stimulated IR frequencies and/or harmonics of the frequencies from the monomolecular layer on the reed and or vapors surrounding the reed are directed forward from the surface of the vibrating reed facing the IR window. Each stimulated line of IR radiation emits as a single lobe of radiation and is transmitted in a forward direction through the suitable 1 to 30 .mu.m infrared window 3.

The frequency and or harmonics thereof may then be detected by a high resolution Fourier analysis interferometer spectrophometer (not shown).

Soil Remineralization -- A network news letter', the fall/winter 86 issue

COMPOSTING MINERALS
by Piet Bouter

Many people can yet boast of the ability to buy food. Far less can take pride in growing it and only a few people dig all the way down to bed-rock bottom solidity to satisfy their sense of sustainability and long term vision. They are bound to bring up rock dust again and again.... it is not only the base of organized life along with water and light but finds one of its most purposeful uses after that: the creation of organic matter, helping transform and conserve it, as opposed to what their stray descendants are doing: dumping, wasting and leaching, suffocating and fouling it, sawing off the limbs they ripened (and rotted?) on.

There are many ways to apply rock dust to the soil. It can be spread by hand, by mechanical means, sprayed with a mechanical sprayer end blown on during wind stillness (avoid inhaling it)...Improvising with fine mesh sieves, stockings and wet brushes for small amounts is lots of fun.

Combining rock dust with organic materials in compost can be a good way to solve application problems. Rock dust assimilates quicker in compost than in poor soils, where you can expect miracles, but not as quickly.

Composting Tips

For compost Helmut Snoek recommends 1 lb per3 sq ft on each layer of a 2/3 ft high and a little less when the dust is extra fine. Don't forget a handful of dirt to inoculate with organisms and try to keep the N-C ratio 1-10. If there is a lot of manure around, you can't mix it with rock dust too soon for immediate improvement of the air and end product. Raw manure is a health hazard til properly composted. Rock dust ties down and absorbs the volatile ammonia compounds, 40-80% of which can gets lost to the air otherwise.

This is why the Swiss bio farmers spread it in their stables, apart from hoof stability it keeps the air purer

Some remarks from the Lubkes (soil specialists often appearing in Acres, U.S.A.) on compost:

Compost heats up faster than rock dust. Do not allow to exceed 130 degrees to prevent heat loss. Rock dust improves aeration end structure end therefore prevents rotting. Aim for a compost with 30-50% organic material. 60-80 lb of fine ground rock dust per ton of compost is considered optimal.

Rock Dust and compost have much in common; they are ready food for life's smallest beginnings and from there on up the whole food chain. To both soil-making life-savers applies the rules of thumb, if you ask me the rule of the most common denomination, and therefore deserving to score highest on any scale of human aspiration (especially desert(born and/or influenced) cultures) the more diverse and varied the elements and ingredients, the richer and more fertile the results (This truth was alluded to 4 times in the first two episodes of a PBS series called The Making of a Continent). Multiculturalism is therefore a more valid concept on microscopic scale than a few notches and 'field magnitudes' with more refined and diversified ways away. The problem is than these borderlines can not ever be drawn sharply cause the micro-mini-minimal molecules floating down the mountain streams and joining up down river are perhaps part of one and the same watershed but join forces with contributions from so many nooks, crannies, folds, valleys and bioregions, that they are bound to see a lot of compromises since they are

not in Kansas anymore having traveled further afield then most bigger organisms therein ever do.

Piet Bouter

Soil Remineralization -- A network news letter', the fall/winter 86 issue

Dairy Farming With Rock Dust

by Georg Abermann

Martin Gasteiger in Unterlohen, Bavaria in Germany has been doing organic farming since 1973 and has reduced the cost dramatically. Yearly he uses10 tons of rock dust at a cost of about $ 400 a year And he gets 7000 liters per hectare (2 1/2 acres) of milk. His cows become 10 years old or twice the age of the average cow end have twice as many calves as the average in Bavaria. How does Gasteiger manage to be so successful with so little means?

He tries to take as good care of the soil as possible. He fertilizes only with small amounts of liquid manure, 10 cubic meters per hectare and only if the soil is dry. He collects all organic matter from his farm and household and composts it together with the calves manure, rock dust and soil and uses this mixture as bacterial nutrients for the field and farmland. He uses this compost as a bacteria supplier for the field and crop land.

The liquid manure is treated especially with rock dust in the stable so that organic and mineral substances are combined and no toxicity arises. Then in a special container, a clay humus mixture is added end it is then aerated. This clay humus mixture is liquid end mixed in a concrete mixer. Out of the clay humus brew, every 5-6 days, for every 20-25 cubic meters of liquid manure, one wheelbarrow of clay humus and some manure compost are added.

Gasteiger says the bacteria in the humus act like an inoculation so that the rotting bacteria in the liquid manure increase dramatically. The aeration gives the necessary oxygen and the finely ground clay material in the concrete mixer and the rock dust have a great active surface that bind toxic elements so that they cannot interfere with the growth of the bacteria in the liquid manure. These clay particles also bind nutrients like nitrates so that they cannot be washed away in the groundwater.

"Instead of buying expensive liquid manure additives, I make my own", says Martin Gasteiger.

The liquid manure thus treated cannot be compared with the urine and manure. To prove this Gasteiger holds his hand in the container, washes it off under cold water without soap and holds it under our noses. There is not the slightest smell. And besides that it does not harm the soil life nor does it burn the grass land, even when the temperature goes above 90 degrees end above all, the animals like to eat the grass grown.

It is applied only in dry weather under the motto, "little but often", about a liter per sq. meter (10sq ft to a meter). He succeeds in taking care of the earthworms, so they multiply end work for trim. The clover stays and manufactures nitrogen through the nitrogen collecting bacteria at the roots of the clover.

Per hectare he adds 5 dt (dt= 1/10 ton) rockdust each year and every three years he adds 5-10 dt. His rock dust is Diabas, a volcanic rock of 55% selesium oxide from Kitzbuhl, Austria- with a guaranteed fineness of 0.09 mm end 1/3 of it is under 0.02 mm in size.

An employee of the Bureau of Agriculture of Bavaria commented in an article on Gasteiger's results very cynically, if he had used conventional fertilizers with as much enthusiasm, his profit would be just as great!

In response to this published comment 26 people wrote letters to the paper protesting this offhand comment-brushing aside of Gasteiger's method and success. They pointed out that people like Gasteiger should get all the help possible as they do something positive end naturel without subsidies!

(Translated by Christian Campe with permission of the author. The article appeared in Grunland magazine 9128/85)

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http://www.acresusa.com/tapes/thumbnail.asp?catid=49&pcid=3

Audio Tapes/Phil Callahan, Ph.D.

Phil Callahan has done more to build a worldwide appreciation of low-level energies in agriculture than anyone. His work in insect communication systems, low-level earth energies, and the paramagnetic force in rock and soil are changing ecological agriculture.

A Small is Beautiful Package
Lee Fryer & panel of speakers, 3 tape audio set, 1993.

Low-Level Energy Update
Phil Callahan, Ph.D., audio tape, 1985.

The World & Body Electric
Phil Callahan, Ph.D., audio tape, 1987.

The World Electric
Phil Callahan, Ph.D., audio tape, 1987.

Low-Level Energy — A Syntesis
Philip Callahan, Ph.D., audio tape, 1986.

Natural Low-Level Energies in Agriculture
Philip S. Callahan, Ph.D., audiot tape, 1995.

Paramagnetic Forces ELF - How to Farm as God Intended
Philip S. Callahan, Ph.D., audio tape, 1994.

Parmagnetism & Native Agriculture
Philip S. Callahan, Ph.D., audio tape, 1999.

The Magnetic Life of Agriculture
Phil S. Callahan, Ph.D., audio tape, 1984.

Mysteries of Low-Level Energies
Phil S. Callahan, Ph.D., audio tape, 1983.

Measuring the Spectrum
Philip Callahan, Ph.D., audio tape, 1993.

Books & Authors 2
Lee Fryer, Arden Andersen, D.O., Ph.D., Phil Callahan, Ph.D., audio tape, 1990.

Frequencies & AIDS
Philip S. Callahan, Ph.D., audio tape, 1989.

Nature's Requirement
Phil Callahan, Ph.D., audio tape, 1988.

Exploring the Spectrum (audio)
Phil Callahan, Ph.D., audio tape, 1992.

Paramagnetism Roundtable — State of the Art
Phil Callahan, Ph.D, Tom Dykstra, Ph.D., Malcolm Beck, & Gary Wilson, audio tape, 2001.

Parmagnetic Rock Dusts in Agriculture

Malcolm Beck, audio tape, 1998.

Low-level Energy & Round Towers
Philip Callahan, Ph.D., audio tape, 1991.

New Findings on Paramagnetism
Phil Callahan, Ph.D., audio tape, 1997.

Callahan Theories in Action — Battling Pests with Electromagnetics
Tom Dykstra, Ph.D., audio tape, 1998.

Low-Level Energies in Agriculture
Philip S. Callahan, Ph.D., 2 tape audio set, 1997.

Native Agriculture, Paramagnetism & the Future of Farming
Phil Callahan, Ph.D., audio tape, 1998.

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www.amazon.com/Tuning-Nature-Philip-S-Callahan/.../0911311696

Tuning in to Nature
Dr. Philip S. Callahan is a philosopher as well as a top-grade scientist. An internationally famous entomologist and ornithologist, he has been responsible for ...

www.amazon.com/Paramagnetism-Rediscovering.../0911311491

Paramagnetism: Rediscovering Nature's Secret Force of Growth [Philip S. Callahan]

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http://www.fiddlersgreen.net/models/buildings/Irish-Tower.html

Irish Round Tower

Irish round towers are early medieval stone towers of a type found mainly in Ireland, with two in Scotland and one on the Isle of Man. Though there is no certain agreement as to their purpose, it is thought they were principally bell towers, places of refuge, or a combination of these. Generally found in the vicinity of a church or monastery, the door of the tower faces the west doorway of the church. In this way it has been possible to determine without excavation the approximate site of lost churches, where the tower still exists. $3

Some interesting Far-Out theories...

This idea that the round towers were erected and used primarily as watch towers and places of protection is strongly debated by an American scientist, Philip Callahan.Writing in his book, Ancient Mysteries, Modern Visions, Callahan discusses research which indicates that the round towers may have been designed, constructed and utilized as huge resonant systems for collecting and storing meter-long wavelengths of magnetic and electromagnetic energy coming from the earth and skies. Based on fascinating studies of the forms of insect antenna and their capacity to resonate to micrometer-long electromagnetic waves, Professor Callahan suggests that the Irish round towers (and similarly shaped religious structures throughout the ancient world) were human-made antenna which collected subtle magnetic radiation from the sun and passed it on to monks meditating in the tower and plants growing around the tower's base.

The round towers were able to function in this way because of their form and also because of their materials of construction. Of the sixty-five towers, twenty-five were built of limestone, thirteen of iron-rich, red sandstone, and the rest of basalt, clay slate or granite - all minerals which have paramagnetic properties and can thus act as magnetic antenna and energy conductors. Callahan further states that the mysterious fact of various towers being filled with rubble for portions of their interiors was not random but rather may have been a method of "tuning" the tower antenna so that it more precisely resonated with various cosmic frequencies.

Equally intriguing, Callahan shows that the geographical arrangement of the round towers throughout the Irish countryside mirrors the positions of the stars in the northern sky during the time of winter solstice. Archaeological excavations at the bases of the towers have revealed that many towers were erected upon the tops of much older graves and it is known that many of the tower sites were considered sacred places long before the arrival of Christianity in Ireland. These facts compel us to wonder if the ancient Irish, like the Egyptians and the Mayans, understood there to be an energetic resonance between certain terrestrial locations and particular celestial bodies. This certainly seems to be the case. All across the Irish countryside certain locations were chosen, precisely designed structures were erected to gather and store various energies, and a tradition of humans' spiritual use of the sites arose over the millennia. While many of the round towers are now crumbling and therefore their antenna function may no longer be operative, a field of holiness still permeates the sites today.

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www.sacredsites.com

Callahan discusses research which indicates that the round towers may have been designed, constructed and utilized as huge resonant systems for collecting and storing meter-long wavelengths of magnetic and electromagnetic energy coming from the earth and skies. Based on fascinating studies of the forms of insect antenna and their capacity to resonate to micrometer-long electromagnetic waves, Professor Callahan suggests that the Irish round towers (and similarly shaped religious structures throughout the ancient world) were human-made antenna which collected subtle magnetic radiation from the sun and passed it on to monks meditating in the tower and plants growing around the tower's base.

"At every tower we measured there was a direct correlation between tower door height and the strongest waves.....That the highly amplified waves occur in the meditative and electrical anesthesia portion of the electromagnetic spectrum is of utmost significance. In 1963, G. Walter researched brain EEG waves from 0.5 to 3 Hz (Delta region) and found anti-infectious effects."

"It is remarkable how little the main dimensions vary. In the great majority of towers the circumference at the base lies between 14 meters and 17 meters and the thickness of the wall at the lowest point at which it can be measured varies from 0.9 meters to 1.4 meters. Doorways, windows, storey heights and diameters also follow clearly defined patterns, and we may well conclude that most of the towers were the work of teams of builders who moved from one monastery to another using standard designs." Barrow goes on to say that: "Most doorways are raised 1.5 meters to 4.5 meters above the ground....but it is possible that the stability of the tower had as much to do with the door heights. The higher you could build before making an opening in the wall the stronger the base would be. Very often the towers were filled in, even as high as the doorways."

The principles used in construction of the towers is always the same: two walls of block and mortar construction are built a few feet from one another and the space between is filled in with a core of rock rubble.

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http://www.whale.to/b/callahan.html

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THE ENIGMA OF THE TOWERS

IRELAND'S COUNTRYSIDE IS DOTTED WITH SCORES OF ROUND TOWERS BUILT BY MONKS IN THE SIXTH AND SEVENTH CENTURIES. FOR MORE THAN 40 YEARS A TOP US SCIENTIST, PROFESSOR PHILIP CALLAHAN, HAS PONDERED THEIR MYSTERY. HIS DISCOVERY, ONE OF THE MOST IMPORTANT THIS CENTURY, HAS HUGE IMPLICATIONS FOR MODERN MAN. FOR THESE TOWERS, HE SAYS, ARE NOTHING LESS THAN RADIO ANTENNAE. BRIAN FREESTON, A DOCUMENTARY FILM MAKER, TELLS THE STORY.

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Belleek is a small town in County Fermanagh, known for its fine porcelain. During the Second World War it was also an ideal position for a top secret radio range station. As a 20-year-old GI, Phil Callahan was responsible for keeping the radio range operational. This station, the first of its kind, enabled RAF Coastal Command to maintain 24-hour cover over the Western Approaches.

'I'm very pleased with what I did there. Callahan says. Keeping aircraft over the Atlantic all the time meant that the U-boats had to remain submerged. The convoys got through and both English and German lives were saved.'

Callahan' s ability to view life from a different perspective imbues his work with a freshness and vitality that is so important to any major scientific breakthrough. His contribution to science has been massive, yet. as most of his work has been in the less than glamorous field of agriculture, it has largely gone unnoticed by the general public. Callahan's expertise covers entomology, ornithology and VLF/ELF radio waves; he is a leading light in non-invasive methods of insect control. It is this broad knowledge that allows a cross-fertilisation of ideas to occur, reminiscent of the way natural philosophers like Faraday, Newton and Tyndall worked.

Indeed much of Callahan's pre-eminent work in the infrared spectrum and with paramagnetism is a continuation of the discoveries made by the Englishman Michael Faraday and his Irish friend John Tyndall.

Radio waves affect human behaviour

Callahan discovered that radio signals in the far infrared spectrum are a crucial element in insect behaviour. He also knew that radio signals could affect human behaviour and well-being.

During a particularly severe winter storm in Ireland in 1944 the young GI was on night duty alone at the station when both the primary and back-up transmitters failed. With ten aircraft out over the Atlantic dependent on his signal to get back, it was a fraught moment.

'I couldn't make any sense of it. Both machines were working fine, but there was no signal transmitting. Callahan shakes his head at the memory. 'But then I remembered what an old Arctic radio man once told me about how ice-coated insulators could earth the signal. So I climbed up the antennae poles and whacked the ice off with a broom

stick. It did the trick. But by the time I'd finished I could hardly stand up; the radio energy had made me drunk."

Round tower energy

As a climber Callahan was familiar with climber's high' -a feeling of calmness and peace combined with a high level of mental and bodily energy sustainable over long periods of time. He had become convinced that the feeling of elation he had when climbing was more to do with the power of the rock than anything else. When he visited his first round tower at Devenish on Loch Erne he experienced a similar feeling to climber's high.

I've always been drawn to mystical places - spots on Earth that induce a feeling of awe or wonder, a feeling of oneness, where there is no real sense of time. Ireland has many of these places. The round tower at Devenish is one.'

It was the feeling from Devenish, along with the incident at the radio station, that created the impetus for Callahan's round tower research.

The Irish round towers were constructed by monks towards the end of the great period of monastic expansion, between the fifth and the seventh centuries. When they were built they would have been the only stone structures in the monastery. Today 25 or more towers stand upright in perfect form, and the remains, or stubs, of another 43 dot the countryside.

I remember asking what special power was hidden in these towers; and could we ever understand this power?'

Discovering the star map

Some years before, Callahan had bought Professor Barrow's Irish Heritage pamphlet on round towers which included a fine map of the still-standing towers.

'I was lying on a couch looking at the map. There was something very familiar about it - apart from it being a map of Ireland! After about five or ten minutes it suddenly flashed into my mind - insight I believe it is called - exactly why the map appeared so familiar. The towers formed a star map of the northern night sky. I have used that sky map dozens and dozens of times hiking around in the deserts of the world. It is gouged like a carved woodblock into my brain.'

One of the best preserved monasteries is Clonmacnoise in the centre of the great plain of Ireland. It is on the Shannon River and is widely assumed to have been the centre for the entire monastic movement. Callahan surmised that it was placed to represent the north star Polaris. All the other star groups then fell into place -Ursa Major, Draco, Cassiopeia, Camelopardalis and Lynx, far to the south (Figures 1 & 2).

What Callahan had drawn was an almost perfect sky for the December solstice. The imperfections in the round tower star plot lie mainly in the fact that the monks had to fix their towers according to the lie of the land.

What is astonishing about the round tower star map of Ireland is that there were two great ecclesiastical centres during the early days of Christianity in Ireland: one at Armagh in the north and one at Clonmacnoise in central Ireland. In relation to the round tower plot of Draco, Armagh is exactly at the point of the ecliptic centre. This demonstrates very clearly that the Celtic peoples of Ireland knew not only that the Earth was round, but also about precession - the slow wobble of the Earth around a theoretical or ecliptic centre of the sky, a circular movement which takes 25,800 years to complete.

It is possible to speculate that the knowledge of astronomy, and especially of precession and the ecliptic centre, was carried to Ireland by the .Ancient Egyptians. The Denderah circular zodiac (300 BC). for example, proves they too had this knowledge.

'The technocrat, who is high-energy, inorganic-slanted, will of course scoff at my star map of round towers and say that the correlation is coincidental.' Callahan shrugs. For the high-energy' technocrat every phenomenon that does not hit one on the head with an inorganic hammer is a coincidence. Coincidence is the cop-out word of the century used to put low-energy organic researchers in their place.'

Natural radio receivers

Could there have been any other purpose than this star map to the construction of round towers? Above all the Celts were a practical people, and to undertake this huge effort just to demonstrate an esoteric knowledge seems unthinkable.

The tower on Devenish island, similar to many others, is a finely jointed structure of sandstone. It is 25 metres high and has a base circumference of 15.14 metres. In the fifth (and top) floor are four square-headed windows facing east-northeast, south-southeast, west-southwest and north-northwest. The lower four floors each have either one or two windows facing in various directions. The doorway is approximately three metres above the ground.

Callahan found that all the round towers were made of paramagnetic stone: that is stone that resonates positively in a magnetic field. He also noticed that all these towers were to be found in diamagnetic areas - areas of much weaker, and opposite, negative, susceptibility.

It was Michael Faraday and John Tyndail who discovered these very subtle forces of para-magnetism and diamagnetism.

Strangely enough, although physicists have spent years measuring these energies, and utilising them to explain theoretical atomic forces, nowhere in the scientific literature has anyone - chemist, physicist, or biologist - asked what these two opposite forces mean to life. Like Mark Twain once said, "everybody talks about the weather but nobody does anything about it. "

In 1956 Callahan discovered that moths were not attracted to visible light, but rather to the infrared emission from scent molecules that became 'peaks' or resonant radiation when they hit the moth's vibrating antenna. Moths navigate by molecular radio laser or maser technology.

It was the antenna with all its hundreds of strange-shaped spines (called sensilla) that was doing the work by feeling the radiation. So, for example, the reason why moths spiral rather than fly direct into a light source is that different parts of their sensilla pick up slightly different wavelengths of the emission, depending on how closely they approach the source (Figure 3).

Callahan s breakthrough came quite suddenly and totally unexpectedly.

'I was just admiring how clever the builders were to make a tower that had a very slight taper of three degrees. Then it dawned on me how similar these towers looked to certain insect antennae. It was a complete revelation.'

Obviously round towers are not conventional antennae. They are in fact built of limestone, mica schist or sandstone blocks and are therefore closer to silicon semi-conductors than to metallic conductors. As the towers have dielectric (insulative) properties, the}' act as DC rectifiers and are able to detect and store incoming cosmic electromagnetic/magnetic energy.

(Fig. 4) Two carborundum round towers. The tower on the left is modelled after Devenish tower and the one on the right after Turlough round tower. Note the very fine field lines of concentrated salts around both towers. On the Turlough tower the salts concentrated heavily at the levels where floors and windows are located.

The physics of dielectric systems is extremely complex. However, they can be formed into tubular or rectangular waveguides to collect and direct energy in the same manner as a metallic radio or TV antenna. The size of antennae determine the length of radio waves with which they are able to resonate. Since round towers are of the order of metres in length they must be, according to Callahan, collectors of cosmic radio waves of a few metres magnitude.

Using a scale model of a round tower, made from paramagnetic carborundum paper and placed in a high frequency-oscillator called a Klystron, Callahan showed that the model actually increased (amplified) the radio energy from 6dB to 9dB. In another experiment it also detected differences in radiation at night and from the sun.

One of the most controversial questions concerning these towers is the usual high placement of the doors, with varying amounts of infill inside up to door level. Historians who have attempted an explanation have cited the

need for defense. But round towers are indefensible, and not large enough to withstand a protracted siege. If the towers are viewed as antennae, then the infill can be seen as a way the monks could fine-tune the tower to assure sharp resonance.

That the monks could detect this energy seems, from the perspective of a high-tech society, incredible. But all they were doing was tuning in to nature; using their bodies as antennae, feeling the energy. In a further experiment a model of the Turlough round tower was soaked in a diamagnetic solution of Epsom salts and then allowed to dry naturally. Thin force lines spaced evenly at one millimetre appeared up the tower. On the conical roof at the top the force line spiralled up to the point. At certain heights up the tower the force lines became much thicker bands. These correlate precisely with the floor levels in the actual tower (Figure 4).

Natural energy for health and soil fertility

So where is the energy coming from and how do we utilise it?

Energy has been detected from three sources: the night sky, the sun, and lightning.

The night sky

The towers are aligned with the stars of the night sky at the winter solstice and we know that cosmic microwave radiation at 14.6 metre wavelengths is emitted from that region of the universe.

The sun

The towers also pick up particles of energy which are separated by sun-flare activity into north and south magnetic poles. At this temperature magnetic poles are torn apart and then stay apart until they become adsorbed (molecules stick to the surface). South 'monopoles' (S) are adsorbed by paramagnetic stone and soil and north monopoles (N) by plants, just like a battery. Oxygen also stores south monopoles; it is the most paramagnetic of gases. Most organic or diamagnetic substances store north monopoles {Figure 5).

Over the aeons the charge trickles out. The south monopoles in the soil meet the north monopoles of seeds or roots, and with the catalyst of nitrogen and water set growth and photosynthesis on their way. It is the fundamental force behind nature.

Round towers, then, act as stone antennae to collect many more south magneto-electric monopoles than the surrounding soil. They release these mono-poles, so stimulating better growth in crops around their base.

A small model round tower placed in the centre of a non-paramagnetic plastic flower pot, with seedling radishes planted around the base of the tower, will stimulate the seedlings to grow many more fine rootlets than a pot with the same soil but no central round tower. Already a farmer in the north of England is using round tower technology and getting significant increases in crop yield.

Lightning

The third source of energy is from lightning. There are over 4,000 strikes a minute around the world and these set up a very high-frequency standing wave of 60,000 Hertz (cycles/ sec) in the atmosphere. Callahan has shown that the towers reduce this frequency to various slower frequencies which -we can use. The amplification factor or strength of signal is between 150 to 200 times the energy outside. The lowest he has discovered is around 8Hz a minute. Recent American medical research has found this frequency in human bodies and has termed it the primary respiratory function. It is vital to our existence.

There are ELF radio frequencies in the 4-14 Hz range, or brain-wave region. During meditation our brains emit waves around 8Hz/sec, so these towers would enhance the ability of monks to meditate. These frequencies also have an anti-infection property.

Frequencies are also found around 2.000Hz - the electric-anaesthesia region - and around 250KHz, the region for electronic heat induction. In the 19th Century some dentists in America were using machines to generate 2,000Hz for dental extraction. Research in Poland in 1986 showed that these types of radiation enhance the autoimmune

system and reduce pain. In other words, the towers aid healing, and could have been places where -women -would go to reduce their birth pains.

According to the Head of the International Institute for Biophysics, Professor Fritz-AlbertPopp, ProfessorCallahan's discovery concerning the Irish round towers is one ox the most important discoveries of the century. The low-energy implications for our health, well-being and nutrition are far reaching.'

Mirrors in the landscape

There is more to come. In antenna technology form follows function, so different shapes will resonate to different frequencies. Obtain an accurate geological survey map of a favourite area, and with a hard steel stylus trace and cut the contours into a sheet of carborundum paper. Immerse the sheet in a saturated solution of Epsom salts for 24 hours. Then allow to dry naturally. In a few days an energy map of growing force lines appears. The lines of force will concentrate in the most energetic spots on the carborundum map. Even more strangely, if the map is put aside and observed for six months or a year, the crystals of diamagnetic Epsom salts will begin to grow and produce little hills and mountains. It is an accurate template of the real landscape.

'Since the crystals will reproduce and grow, who is to say that the forces of rock and soil are not living!' Callahan gestures to the map. The beauty of these experiments is that anyone can show how these weak forces can grow and accumulate energy.

'You can even detect differences in behaviour in various populations, dependent on the paramagnetic nature of the sub-rock. Take Belfast for instance. The sub-rock under that city is basalt, which is highly paramagnetic, and the sub-rock under Dublin is diamagnetic limestone. We know that Dubliners are more laid-back. It's the same difference with the population of North and South Vietnam and, say, between New York and Florida.'

Stone circles, steeples, pyramids - are they all antennae?

Callahan's findings concerning the Irish round towers uncover a major reason for the construction of stone circles, church steeples, pagodas, chedi, minarets and pyramids. They are all antennae - tapping into natural radic energy for healing, meditation and so on.

But whatever man has created as an antenna, nature was there first (Figures 6 to 11).

The Egyptians had two hieroglyphics for stone - both take the exact proportions of the building stones found in the Great Pyramid. One Hieroglyph is open like this: , the other has lines across it like this: , in the same way as Callahan's model paramagnetic round tower has force lines across it. Both symbols represent the same syllable for stone, aner. The hieroglyph for prepared stone is aner sept (two syllables) and is:

(Fig. 6) Burmese stupas. (inset fig. 7) Many diptera (flies) have stupa or pagoda-tapered sensilla on their antennae.

It contains a feather for levitation, waves, a mouth (source of diamagnetic breath), a stone (with paramagnetic force lines) and finally a pyramid (Septih, the Dog Star). The little circle is the sign for sand from which the rocks are made, the bar the sign for symmetry, and the three lines ||| for plural (many building stones).

The hieroglyph for black granite is:

Below: (fig. 12) An Egyptian priestess raising her hands above the outstretched body of a pharaoh. Opposite: (fig. 13) Another panel showing a pharaoh levitating off the couch. Similar to the panels referred to in the text.

This word is similar to prepared granite except that the pyramid sign (Septih), forthe Dog Star, is replaced by the symbol for a wing (many feathers), a much stronger levitation force than one feather . In other words black granite is a paramagnetic battery for the force. Every Egyptian word for different types of para-magnetic stone, eg. aner-en-rut (sandstone),

(Fig. 11) The antenna sensilla of a wasp showing pyramidal sensilia and corrugated sensilla - two of the best configurations for focusing and concentrating the paramagnetic force. The species, Polistes metricus, is a vespid wasp. Although seldom mentioned in the popular literature, the vespid hieroglyph is even more common in

Egyptian lore than the sacred scarab beetle.

aner-en-hatch (white limestone), aner-en-bekbenu (porphyry), aner-en-moat (stone of truth) etc., has the symbol with force field lines in it.

It is possible that the knowledge and engineering skills were passed down to the Celts from the Ancient Egptians. It was in Egypt, perhaps, that man reached a pinnacle of subtle-energy manipulation.

Scientific proof for levitation?

Callahan suggests that the outer limestone portion of the Great Pyramid at Giza serves as a giant condenser lens - as in a photographic enlarger - to diffuse and concentrate paramagnetic waves. The full pagoda construction of the King's Chamber is made from the most highly paramagnetic of all stone, pink granite. Its succession of stone floors or lenses serves to concentrate the cosmic para-magnetism (like light waves; down into the actual chamber.

Suspended model round towers are very sensitive energy detectors, responding to the paramagnetic-infrared aura of the human body. To prove his theory Callahan took one into the King's Chamber.

'Usually the model would swing through about 60 or 70 degrees to point to an approaching human. I found that in the King's Chamber the same model would move 200-300 degrees in a steady sweep to the human aura. That's telekinesis. The sensor was five to ten times as sensitive inside the Pyramid. The model also rocked violently up and down every time a human body approached it; this is, in effect. levitation.'

Callahan says that since the outer smooth tura limestone casing of the Great Pyramid has been destroyed it will never again stimulate total levitation of a heavy body. Certainly, in my opinion, one of the reasons for its construction was to induce levitation.' He refers to a beautiful series of ancient stone-wall reliefs which show an Egyptian priestess raising her hands above the outstretched body of a pharaoh. In the next panel the pharaoh is six inches off the couch (see figures 12 & 73).

'Deep in the Great Pyramid the priests breathed out that mixture we call breath - but which the Orientals call the spirit of life,' Callahan explains. 'They chanted to modulate the potent vapour which was then energy magnified by the great stone paramagnetic pyramid. Ever so gently they rose in the air. Their very own wall pictographs tell us that this is so.'

The author is looking for co-production finance for a film/video documentary series.

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