from the electrodes **37** and **40** through the insulating material **46** for connection of the field emitter **35** to a high frequency, high voltage source to develop a generally toroidal electric field around the field emitter **35**.

Referring to FIG. **4** there is shown in schematic form the floor **50** and two side walls **52** and **54** of a room. Four field emitters **56** are mounted on the floor near the four corners of the room and are electrically connected to a power supply **58** to apply a high frequency high voltage across each of the field emitters **56**. For convenience of installation, one terminal of each of the emitters **56** is grounded and the other terminals are connected to the hot terminal of the power supply **58**. The field emitters may be of the type shown in FIG. **2** or of the type shown in FIG. **3** and the power supply **58** provides an output of at least 5000 volts RMS at a frequency of at least 20 kiloHertz. By strategically locating the field emitters **56** within the room the need for fans for circulating the air through the electric fields surrounding the emitters can be eliminated thereby reducing the initial cost and the operating cost of the system as well as the noise associated with such fans.

In order to substantiate the fact that doping of the insulator with different non-dielectric materials alters the resultant field and in some cases increases the field strength a substantial amount, several different experiments were conducted. In making these experiments, three different emitters of identical size and shape were constructed. The dielectric slabs were circular being 80 mm in diameter and 15 mm thick. The plates were 63 mm in diameter. In one emitter, the dielectric was a pure epoxy. In a second emitter the dielectric was epoxy containing ten percent by volume of small lead spheres dispersed throughout the epoxy so as to be insulated from one another. The spheres had a diameter of 0.7 mm. In a third emitter the epoxy was doped with silicon carbide granules having a size of 75 mesh. These granules were of the type used in lapidary grinding and thus contain a substantial amount of elemental impurities wherefor the material is actually a crude semi-conductor. It is also paramagnetic.

The emitters were connected across a high frequency power supply of 24 kV at 44 kiloHertz in the manner described in my U.S. Pat. No. 4,391,773 using a Kiethly Elecrometer and an ion/electron probe. At a distance of ten centimeters from the emitters the following measurments were made.

Pure epoxy dielectric	2.98×10^{11} electrons/cm^2
Epoxy with lead spheres	3.97×10^{11} electrons/cm^2
Epoxy with silicon carbide	4.76×10^{11} electrons/cm^2

It may thus be seen that the addition of conductive or semiconducive or paramagnetic particles to the dielectric greatly increases the field strength of the field generated by the emitter.

While the present invention has been described in connection with particular embodiments thereof, it will be understood by those skilled in the art that many changes and modifications may be made without departing from the true spirit and scope of the present invention. Therefore, it is intended by the appended claims to cover all such changes and modifications which come within the true spirit and scope of this invention.

What is claimed:

1. Apparatus for generating an electric field of the type comprising a solid dielectric member sandwiched between first and second electrodes and a high voltage, high frequency energy source connected between said electrodes, the improvement wherein said dielectric member comprises,

a dielectric material having a plurality of discrete, conductive members dispersed therein.

2. Apparatus according to claim **1** wherein

said conductive members are semiconductive.

3. Apparatus according to claim **2** wherein

said conductive members are formed of silicon carbide.

4. Apparatus according to claim **2** wherein

said conductive members are silicon carbide granules randomly dispersed in said dielectric material.

5. Apparatus according to claim **4** wherein

said dielectric material is parafinic.

6. Apparatus according to claim **1** wherein

said conductive members are paramagnetic.

7. Apparatus according to claim **6** wherein said dielectric material is parafinic.

8. A method of purifying air, comprising the steps of:

placing in proximity to said air a capacitor including a pair of electrodes spaced apart by a solid dielectric material in which a plurality of mutually spaced apart conductive pieces are dispersed,

applying between said electrodes an A.C. voltage of at least 5000 volts having a frequency of at least 20 kiloHertz.

9. A method according to claim **8** wherein

said capacitor is encapsulated in a solid insulating material.

10. A method according to claim **9** wherein

a plurality of members selected from the group of conductive and semiconductive materials are dispersed in said insulating material.

11. A method of purifying the air in an environmental area, comprises the steps of

placing at respectively spaced locations in said area a plurality of capacitors each having first and second spaced electrodes separated by a solid dielectric member formed of a dielectric material in which a plurality of conductive pieces are dispersed, and

connecting between the associated ones of said first and second spaced electrodes an A.C. voltage of at least 5000 volts and having a frequency of at least 20 kiloHertz.

12. A method according to claim **11** wherein

said pieces are semiconductive.

13. A method acording to claim **11** wherein

said pieces are paramagnetic.

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