maximum amplitude at the predetermined acoustic resonant frequency. Using this method a unique signature for a plastic that contains a certain type of explosive can be determined.

Once the qualitative resonant acoustic signature has been determined it can be stored in a microprocessor or other memory storage device for subsequent comparative analysis in a recognition mode. Also once the qualitative resonant acoustic and/or acousto-EM energy signature has been determined, quantitative results may be determined by comparing the resonant acoustic signature amplitudes from samples of known concentration of the plastic explosives. Samples with higher concentrations of plastic explosives will have a higher resonant acoustic signature amplitudes. In turn, a ratio can be derived allowing for assessment of load in the sample of unknown concentration.

Suitcases, packages and people can be scanned at an airport terminal to determine if a plastic explosive is being transported into the terminal or on a carrier. A suitcase can be placed between two transducers, one transducer generates the acoustic signal and sweeps through a wide band of target frequencies, and the other transducer detects the transmitted acoustic signal. The acoustic signal transmitted from the suitcase is fed into the positive lead of a signal analyzer. The known acoustic resonant signatures for leather, paper, fabric, plastics, and other materials that would normally be included in passenger's luggage or carry-on packages are fed into the negative lead of the signal analyzer. Thus the control signatures cancel out their component resonant frequencies in the positive lead sample. The remaining frequencies are analyzed for the acoustic resonant signature of the plastic explosive.

In another embodiment, the electromagnetic energy pattern of the acousto-EM signature of a plastic explosive is transmitted to the suitcase. If an acoustic transducer detects an acoustic signal from within the suitcase which is indicating the material has been induced into acoustic resonance then detection is affirmed. The amplitude of the acoustic signal may provide additional information on the relative size or amount of explosive in the suitcase.

In yet another embodiment the acousto-EM signature of a plastic explosive is transmitted to the suitcase. Both acoustic energy and acousto-EM properties of the contents within the suitcase are measured to detect and identify the plastic explosive.

That which is claimed is:

1. A method for targeting a biologic structure to affect its function characterized by the method which comprises irradiating the biologic structure with acoustic energy having a frequency near or at the resonant frequency of the biologic structure to induce acoustic resonance therein.

2. The method according to claim 1 characterized by further comprising the step of determining an acoustic signature of the biologic structure after being induced into acoustic resonance.

3. The method according to claim 1 characterized by further comprising the step of determining an acoustic signature and acousto-EM signature of the biologic structure after the biologic structure is induced into acoustic resonance.

4. The method according to claim 1 characterized by further comprising irradiating the specific biologic structure with electromagnetic energy equivalent to a predetermined acousto-EM signature of the biologic structure in acoustic resonance.

5. The method according to claim 1 characterized in that the acoustic energy is applied at a sufficient power intensity to affect functions of the biologic structure.

6. The method according to claim 5 characterized in that the functions are selected from the group consisting of disruption and augmentation.

7. A method for targeting a specific biologic structure to affect its function characterized without effecting nearby structures characterized by the steps comprising:

a) determining at least one resonant acoustic frequency of the specific biologic structure; and

b) irradiating the biologic structure with acoustic energy having a frequency including the resonant frequency of the biologic structure to induce acoustic resonance therein, the acoustic energy being applied at a power output level sufficient to affect functioning of the biologic structure.

8. The method according to claim 7 characterized in that the functioning of the biologic structure is augmented.

9. The method according to claim 7 characterized in that the functioning of the biologic structure is disrupted.

10 The method according to claim 7 characterized in that the biologic structure is selected from the group consisting of virus, bacteria, fungi, tissue masses, worms, arthropods, plants, animals and bone.

11. A method for specifically targeting a biologic structure and affecting its function by inducing acoustic resonance therein characterized by the steps comprising:

a) applying at least one resonant acoustic frequency of the biologic structure and/or introducing electromagnetic energy equivalent to a predetermined electromagnetic energy pattern of the biologic structure; and

b) applying (a) and/or (b) each at a power intensity level to induce acoustic resonance within the targeted biologic structure and to affect functioning therein.

12. The method according to claim 11 characterized in that the functioning of the biologic structure is augmented.

13. The method according to claim 11 characterized in that the functioning of the biologic structure is disrupted.

14. The method according to claim 11 characterized in that the electromagnetic energy pattern is manifested as a electromagnetic property selected from direct current, alternating current, electric field, magnetic field, and electromagnetic radiation.

15. The method according to claim 14 characterized in that a frequency of the alternating current is applied to the structure.

16. A method for targeting a biologic structure to affect its function characterized by the step which comprises applying electromagnetic energy to the biologic structure to induce acoustic resonance therein and affect its functions.

17. The method according to claim 16 characterized in that the electromagnetic energy is equivalent to an electromagnetic energy pattern of the biologic structure and/or equivalent to at least one resonant acoustic frequency of the structure.

18. The method according to claim 16 characterized in that the electromagnetic energy is applied at a power output level sufficient to affect functioning of the biologic structure, the functioning being augmentation or disruption.

19. The method according to claim 17 characterized by further comprising determining an acousto-EM signature of the biologic structure.

20. The method according to claim 17 characterized by further comprising comparing the

acousto-EM signature of the biologic structure to a previously determined reference acousto-EM signature.

21. The method according to claim 16 characterized by further comprising determining an acoustic signature of the biologic structure.

22. The method according to claim 16 characterized by further comprising comparing the acoustic signature of the biologic structure to a previously determined reference acoustic signature.

23. A method to induce acoustic stimulation of a biologic structure to detect and/or identify the biologic structure characterized by the steps comprising:

a) applying to the biologic structure acoustic energy having a non-resonant frequency to stimulate the biologic structure; and

b) receiving electromagnetic energy from the structure after the acoustic energy has interacted with the structure; and

c) determining the non-resonant electromagnetic signature of the stimulated biologic structure.

24. A system for inducing acoustic stimulation of a biologic structure to detect and/or identify the biologic characterized by comprising:

a) means for applying to the biologic structure acoustic energy having a non-resonant frequency to stimulate the biologic structure; and

b) means for receiving electromagnetic energy from the structure after the acoustic energy has interacted with the structure; and

c) means for determining the non-resonant electromagnetic signature of the stimulated biologic structure.

25. A method for detecting and/or identifying an inorganic or biologic structure characterized by the steps comprising:

a) inducing acoustic resonance in the structure; and

b) detecting an acoustic signature of the structure.

26. The method according to claim 25 characterized by further comprising comparing a currently determined acoustic signature with a previously determined acoustic signature of the structure.

27. The method according to claim 25 characterized by further comprising detecting a

resonant acousto-EM signature of the structure by detecting at least one electromagnetic property of energy caused by inducing acoustic resonance in the targeted structure.

28. The method according to claim 25 characterized in that acoustic resonance is induce with the introduction of energy selected from the group consisting of acoustic energy including at least one resonant acoustic frequency of the structure, electromagnetic energy equivalent to at least one resonant acoustic frequency of the structure and electromagnetic energy equivalent to at least one acousto-EM signature of the structure.

29. A system for identifying a structure by determining the resonant acoustic signature of the structure characterized by comprising:

a) means for inducing acoustic resonance in the structure;

b) means for detecting the acoustic signature of the structure; and

c) means for comparing the acoustic signature of the structure with a reference acoustic signature of the structure.

30. The system according to claim 29 characterized by further comprising detecting an acousto-EM energy signature of the structure in acoustic resonance which comprises means for detecting at least one manifested electromagnetic property of the targeted structure.

31. The system according to claim 30 characterized in that the structure is selected from the group consisting of inorganic and biologic.

32. The system according to claim 29 characterized in that the means for inducing acoustic resonance in the structure includes a signal generating device and at least one transducer.

33. The system according to claim 32 characterized in that placement of the transducer is selected from the group consisting of on the bottom of a vessel, as the walls of a vessel, in a vessel, intravascularly in the biologic structure, extracorporeally of the biologic structure, in a hand held probe, a piezoelectric sheet, in a remote control unit and in a scalpel tip.

34. A system for identifying a structure by determining an acoustic signature and/or acousto-EM signature of the structure characterized by comprising:

a) means for inducing acoustic resonance in the structure;

b) means for detecting an acoustic and/or acousto-EM energy signature of the structure in acoustic resonance.