CLAIMS

1. A device for stimulating a tissue with electromagnetic fields, the device comprising:

- a computing unit;

- an external power source connected to the computing unit;

- a decoupling circuit connected to the external power source and to the computing unit; and

- an arrangement of electromagnetic transducers connected to the computing unit and to the decoupling circuit, wherein the arrangement of electromagnetic transducers is functionally disposed over the tissue;

wherein the computing unit is configured to:

A) generate an activation signal having a waveform that generates electromagnetic field jerk; and

B) apply the activation signal to the arrangement of electromagnetic transducers;

wherein the arrangement of electromagnetic transducers produces jerk-generating electromagnetic fields which stimulate the tissue upon application of the activation signal,

wherein said waveform is described by a mathematical function wherein at least a unit triplet is obtained in its third derivative at some point of the mathematical function.

2. The device of Claim 1, wherein the computing unit is configured to:

a) generate a carrier signal with a series of pulses;

b) generate a modulating signal having a waveform that generates;

c) generate an activation signal by modulating the carrier signal using the modulating signal having a waveform that generates jerk.

3. A device for stimulating a tissue with electromagnetic fields, the device comprising:

- a computing unit;

- an external power source connected to the computing unit;

- a decoupling circuit connected to the external power source and to the computing unit; and

- an arrangement of electromagnetic transducers connected to the computing unit and to the decoupling circuit, wherein the arrangement of electromagnetic transducers is functionally disposed over the tissue;

wherein the computing unit is configured to:

a) generate a carrier signal with a series of pulses;

b) generate a modulating signal that generates jerk;

c) generate an activation signal by modulating the carrier signal using the modulating signal that generates jerk; and

d) apply the activation signal to the arrangement of electromagnetic transducers;

wherein the arrangement of electromagnetic transducers produces jerk-generating electromagnetic fields which stimulate the tissue upon application of the activation signal,

wherein the activation signal has a waveform, said waveform described by a mathematical function wherein at least a unit triplet is obtained in its third derivative at some point of the mathematical function.

4. The device of Claim 1 or 3, for the use in reducing a particle size of a material.

5. The device of Claim 1 or 3, for the use in reducing a particle size of a tissue.

6. The device of Claim 1 or 3, wherein the electromagnetic transducers of the arrangement of electromagnetic transducers are selected from electrical field transducers, magnetic field transducers, electrostatic field transducers, and combinations thereof.

7. The device of Claim 1 or 3, wherein the electromagnetic transducers are selected from electrical field transducers and the electrostatic field transducers consisting of motors, electrodes, photoelectric transducers, electric induction actuators, conductive plates that generate electric fields, antennas, and combinations thereof.

8. The device of Claim 1 or 3, wherein the electromagnetic transducers are selected from magnetic field transducers selected from the group consisting of motors, magnetic induction

actuators, core or non-core coils that generate magnetic fields, electromagnets, antennas and combinations thereof.

9. The device of Claim 1 or 3, wherein the activation signal is selected from the group consisting of an alternating current or direct current signal, a pulsed signal, a squared wave signal with variation of duty cycle, a triangular wave signal, a sawtooth wave signal, a segmented signal, and combinations thereof.

10. The device of Claim 1 or 3, wherein, the activation signal is an alternating or non-alternating pulse signal which generates jerk.

11. The device of Claim 1 or 3, wherein, the activation signal changes its parameters of: voltage amplitude, frequency and phase, based on a tissue temperature feedback.

12. The device of Claim 1 or 3, wherein, the activation signal changes its parameters of: voltage amplitude, frequency and phase, based on a tissue impedance response feedback.

13. The device of Claim 1 or 3, wherein the activation signal change from -20 kV to 20 kV in a time period ranging between about 1 ns and about 0.5 s.

14. The device of Claim 3, wherein, the carrier signal is a signal of alternating pulses.

15. The device of Claim 3, wherein the carrier signal has a frequency of at least one frequency order greater than the frequency of the modulating signal.

16. The device of Claim 3, wherein the carrier signal formed by a series of pulses has at least one pulse with a duration between about 1 ns and about 0.5 s.

17. The device of Claim 3, wherein in the modulating signal is selected from the group consisting of an alternating current signal, a direct current signal, a pulsed signal, a squared

wave signal with variation of the duty cycle, a triangular wave signal, a sawtooth wave signal, a segmented signal, and combinations thereof.

18. The device of Claim 3, wherein in sub-step c), the modulation of the carrier signal is selected from the group consisting of: frequency modulation (FM), amplitude modulation (AM), phase modulation (PM), pulse width modulation (PWM), pulse position modulation (PPM), and combinations thereof.

19. The device of Claim 3, wherein the modulating signal and the carrier signal change with a tissue temperature feedback.

20. The device of Claim 3, wherein the modulating signal and the carrier signal change with a tissue impedance response feedback.

21. The device of Claim 3, wherein in step c), the modulation of the carrier signal is selected from the group consisting of modulation by variation of voltage amplitude, modulation by phase variation, modulation by variation of duty cycle, modulation by variation of pulse position, and combinations thereof.

22. The device of Claim 3, wherein the modulating signal and the carrier signal change their parameters of: voltage amplitude, frequency and phase, based on a tissue temperature feedback.

23. The device of Claim 3, wherein the modulating signal and the carrier signal change their parameters of: voltage amplitude, frequency and phase, based on a tissue impedance response feed.