IN THE CLAIMS

We claim:

1. A repetitive transcranial magnet stimulation (rTMS) device to treat neuropsychiatric conditions or to improve physiological functions which comprises:

a. a housing that conforms to the shape of a head of a patient; and

b a coil configuration that produces a magnetic field capable of delivering magnetic stimulation to two or more regions of a brain of a patient fitted with the rTMS device.

2. The rTMS device of claim 1 wherein the coil configuration comprises 2 or more coils.

3. The rTMS device of claim 1 wherein the coil configuration comprises a single coil that is shaped to deliver magnetic stimulation to two or more regions of the brain of the patient.

4. The rTMS device of claim 1 wherein the geometry of the coil configuration is a phased-array of magnetic field emitting devices, allowing complex geometries and emission fields.

5. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the front and rear regions of the brain.

6. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the motor cortex and frontal cortex regions of the brain.

7. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the lateral sides of the frontal lobe region of the brain.

8. The rTMS device of claim 1 wherein the pulses generated by the coil configuration is synchronized to promote coherence and synchronous behavior between multiple locations in the brain.

9. A method of optimizing repetitive transcranial magnetic stimulation (rTMS) of a patient with an rTMS device which comprises:

a. recording the patient's whole head EEG;

b. mapping the energy of the EEG at one or more frequencies to identify regions of incoherent or non-synchronous brain activity; and

c administering rTMS to the regions of the brain that are incoherent and non-synchronous.

10. The method of claim 9 wherein the rTMS device comprises:

a. 2 or more coils,

b. a single coil configured in such a way to deliver stimulation to 2 distinct regions of the brain,

c. a phased-array magnetic field emitting device capable of forming complex geometries and emission fields, wherein the phased array modalities are leveraged to induce positional and temporal intensities or

d. a grapheme based magnet.

11. The method of claim 9 wherein areas of low energy are found by measuring the energy of the EEG at the interested frequency across the brain employing an algorithm selected from the group consisting of least squares, LORETA, and focal optimization.

12. The method of claim 9 wherein areas of low energy are found by measuring the Q-factor (width of the frequency plot) at the one or more frequencies used to map the energy of the EEG.

13. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a first configuration;

c. a plurality of graphene magnetic emitters having a second configuration wherein the placement of the graphene emitters produces a phase array effect when the emitters are activated.

14. The TMS cap of claim 13 wherein the first configuration is a db emitter configuration and the second configuration is a yy emitter configuration.

15. The TMS cap of claim 14 further comprising:

d. a plurality of touch-less EEG sensors.

16. A repetitive transcranial magnet stimulation (rTMS) device to treat neuropsychiatric conditions or to improve physiological functions which comprises a plurality of graphene magnetic emitters in a configuration that produces a magnetic field capable of delivering magnetic stimulation to two or more regions of a brain of a patient fitted with the rTMS device.

17. The rTMS device of claim 16 wherein the geometry of the graphene magnetic emitters is a phased-array of magnetic field emitting devices, allowing complex geometries and emission fields.

18. The rTMS device of claim 17 wherein the graphene magnetic emitters comprise db emitters and yy emitters

19. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a first configuration;

c. a plurality of graphene magnetic emitters having a second configuration; and

d. a plurality of touch-less EEG sensors

wherein the placement of the graphene emitters produces a phase array effect when the emitters are activated and the touch-less EEG sensors measure brain wave patterns when the sensors are activated.

20. The TMS cap of claim 19 wherein the first configuration is a db emitter configuration and the second configuration is a yy emitter configuration.

21. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a first configuration;

c. a plurality of graphene magnetic emitters having a second configuration;

d. a plurality of touch-less EEG sensors;

e. a wire attached to each emitter and sensor that connects the emitters and sensors to a control panel that is programmed to operate the emitters and sensors

wherein the placement of the graphene emitters produces a phased array effect when the emitters are activated and the touch-less EEG sensors measure brain wave patterns when the sensors are activated.

22. The TMS cap of claim 21 wherein the first configuration is a db emitter configuration and the second configuration is a yy emitter configuration.

23. A magnetic device comprising:
    a. a plurality of graphene magnetic emitters in a configuration that produces a phased array effect and
    b. at least one sensor.

24. The magnetic device of claim 23 wherein the emitters are two or more configurations.

25. The magnetic device of claim 24 wherein the emitters comprise db emiiters and yy emitters.

26. A TMS device comprising a plurality of graphene magnetic emitters.

27. The TMS device of claim 26 further comprising a plurality of EEG sensors.

**CLAIMS**

1. A repetitive transcranial magnet stimulation (rTMS) device for use in the treatment of neuropsychiatric disorders or to improve physiological functions which comprises:

a. a housing that conforms to the shape of a head of a patient; and

b. a plurality of graphene magnetic coils that are shaped in a dog-bone (db) configuration to produce a plurality of db-magnetic emitters;

c. a plurality of graphene magnetic coils that are shaped in a yoyo string (yy) configuration to produce a plurality of yy-magnetic emitters;

wherein the plurality of db-magnetic emitters and the plurality of yy-magnetic emitters are affixed on the housing, and are positioned thereon in an alternating arrangement.

2. The rTMS device of claim 1 wherein the geometry of the coil configuration of the plurality of the db-magnetic emitters and the plurality of the yy-magnetic emitters is a phased-array of magnetic field emitting devices, allowing complex geometries and emission fields.

3. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the front and rear regions of the brain.

4. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the motor cortex and frontal cortex regions of the brain.

5. The rTMS device of claim 1 wherein the device delivers magnetic stimulation to the lateral sides of the frontal lobe region of the brain.

6. The rTMS device of claim 1 wherein the pulses generated by the plurality of db magnetic emitters and the plurality of yy magnetic emitters is are synchronized to promote coherence and synchronous behavior between multiple locations in the brain.

7. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a db emitter configuration; and

c. a plurality of graphene magnetic emitters having a yy emitter configuration

wherein the plurality of graphene magnetic emitters are affixed on the cap base and are positioned thereon in an alternating arrangement, and wherein the placement of the graphene emitters produces a phase array effect when the emitters are activated.

8. The TMS cap of claim 7 further comprising:

d. a plurality of touch-less EEG sensors.

9. A repetitive transcranial magnet stimulation (rTMS) device for use in the treatment of neuropsychiatric disorders or to improve physiological functions which comprises a plurality of graphene magnetic emitters in a configuration that produces a magnetic field capable of delivering magnetic stimulation to two or more regions of a brain of a patient fitted with the rTMS device, wherein the graphene magnetic emitters comprise db-emitters and yy emitters, wherein the db-emitters and the yy-emitters are arranged in an alternating configuration.

10. The rTMS device of claim 9 wherein the geometry of the graphene magnetic emitters is a phased-array of magnetic field emitting devices, allowing complex geometries and emission fields.

11. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a db emitter configuration;

c. a plurality of graphene magnetic emitters having a yy emitter configuration; and

d. a plurality of touch-less EEG sensors

wherein the plurality of graphene magnetic emitters are affixed on the cap base and are positioned thereon in an alternating arrangement, and wherein the placement of the graphene emitters produces a phase array effect when the emitters are activated and the touch-less EEG sensors measure brain wave patterns when the sensors are activated.

12. A TMS cap which comprises:

a. a cap base that fits over the head of a patient;

b. a plurality of graphene magnetic emitters having a db emitter configuration;

c. a plurality of graphene magnetic emitters having a yy emitter configuration;

d. a plurality of touch-less EEG sensors;

e. a wire attached to each emitter and sensor that connects the emitters and sensors to a control panel that is programmed to operate the emitters and sensors

wherein the plurality of graphene magnetic emitters are affixed on the cap base and are positioned thereon in an alternating arrangement, and wherein the placement of the graphene emitters produces a phased array effect when the emitters are activated and the touch-less EEG sensors measure brain wave patterns when the sensors are activated.

13. A TMS device comprising a plurality of graphene magnetic emitters having a db emitter configuration and a plurality of graphene magnetic emitters having a yy emitter configuration, wherein the magnetic emitters are butted against each other, and are positioned in an alternating arrangement.

14. The TMS device of claim 13 further comprising a plurality of EEG sensors.