What is claimed is:

1. A system for treating a liquid beverage using an electromagnetic field comprising alternating current (AC) and direct current (DC) components, comprising:

a device for generating a DC biased time-varying frequency pulsating electromagnetic wave comprising a biased DC component,

a power supply for supplying power to the device,

a treatment chamber containing a treatment liquid beverage in either static or flowing state,

one or more capacitive emitter pairs arranged in a predetermined pattern and placed to be in direct contact with the treatment liquid beverage, wherein each two adjacent capacitive emitters are spaced at a predefined distance and respectively electrically coupled with first and second output terminals of the device,

wherein the device is configured to apply the DC biased time-varying frequency pulsating electromagnetic wave to the treatment liquid beverage to generate a pulsating capacitive field having a field strength between the capacitive emitters, and

wherein a time-varying frequency and pulsating AC wave current comprising the biased DC component is provided in the treatment liquid beverage to produce a negative oxidation reduction potential (ORP) shift in the treatment liquid beverage whose pH substantially remains constant under a combined effect of the field strength of the pulsating capacitive field and the biased DC component.

2. The system of claim 1, wherein the time-varying frequency and pulsating AC wave current and the DC component of the generated field are provided to energize the treatment beverage such that one or more treatment effects are induced in the treatment liquid beverage.

3. The system of claim 2, wherein the treatment effects comprise one or more of the following:

1) reducing throat burning sensation of the treatment liquid beverage,

2) reducing astringency of the treatment liquid beverage,

3) increasing body fat/lipid burn metabolism through consumption of the treatment liquid beverage;

4) reducing harmful toxin effect of the treatment liquid beverage if alcoholic component is present, and

5) facilitating ageing effect of the treatment liquid beverage if alcoholic component is present.

4. The system of claim 1, wherein a plurality of emitter pairs are included and placed in the treatment chamber in a predetermined pattern and come in direct contact with the treatment liquid beverage, or the plurality of emitter pairs are mounted inline at a position where the emitters are in direct contact with the treatment liquid beverage.

5. The system of claim 1, wherein the emitters are provided in the form of plates or rods arranged in parallel coupling electrically with the first and second output terminals of the device, respectively, and wherein the emitters substantially extend over an entire length of the treatment chamber.

6. The system of claim 1, wherein the plurality of emitter pairs are provided as intermediate discharge emitters which are arranged in rows in parallel to each other, and wherein each of the emitters has a part of emitter surface covered by a conductive coating, and the coated emitter surfaces being oriented in one direction and arranged between non-coated emitter surfaces.

7. The system of any one of claims 1 to 6, wherein the two adjacent capacitive emitters are spaced at a distance of less than 10 mm, preferably less than 6 mm.

8. The system of any one of claims 1 to 6, wherein the device comprises an AC wave generator for generating an AC electromagnetic wave having a time-varying frequency at a desired sweeping time, and a DC biasing unit electrically coupled in series with the AC wave generator, wherein the DC biasing unit is configured to produce a DC output transmitted to the AC wave generator for generating the DC biased time-varying frequency pulsating electromagnetic wave comprising a biased DC component.

9. The system of any one of claims 1 to 6, wherein the device comprises an AC wave generator for generating an AC electromagnetic wave having a time-varying frequency at a desired sweeping time, the AC wave generator being programmed to

create imbalance time varying frequency wave form to generate the DC biased time-varying frequency pulsating electromagnetic wave comprising a net DC component.

10. The system of any one of claims 1 to 6, further comprising an ORP meter for real-time monitoring and measuring the ORP of the treatment liquid beverage.

11. The system of any one of claims 1 to 6, further comprising a FTIR spectrometer for scanning multiple consecutive beverage samples taken from the treatment liquid beverage to obtain a plurality of FTIR spectra which are mapped and analyzed to acquire a maximum vertical variation of peak height of a same absorbance peaks so as to determine a degree of energization, preferably a degree of non-thermal energization of the treatment liquid beverage.

12. The system of any one of claims 1 to 6, further comprising a cooler used to cool down the treatment liquid beverage and/or a stirrer for homogenization of the treatment liquid beverage.

13. The system of any one of claims 1 to 6, wherein the device is configured to generate the DC biased time-varying frequency pulsating electromagnetic wave comprising a biased DC component, having one or more of:

- a wave form selected from square, sine or triangular wave,
- a frequency between about 100 Hz and 1,000,000 Hz preferably between 500 to 10,000 Hz,
- a sweeping frequency between 1 Hz and 1000 Hz, preferably 10 Hz and 100Hz, and
- a maximum peak voltage of the biased DC component has less than half of max AC peak voltage.

14. A method for treating a liquid beverage using an electromagnetic field comprising alternating current (AC) and direct current (DC) components, comprising the steps of:

generating a DC biased time-varying frequency pulsating electromagnetic wave comprising a biased DC component, and

applying the DC biased time-varying frequency pulsating electromagnetic wave to a treatment liquid beverage in either static or flowing state to provide a time-varying frequency and pulsating AC wave current comprising the biased DC component,

wherein the time-varying frequency and pulsating AC wave current comprising the biased DC component is transmitted to one or more capacitive emitter pairs arranged in a predetermined pattern and placed to be in direct contact with the liquid beverage so as to generate a pulsating capacitive field having a field strength between the capacitive emitters, thereby to produce a negative oxidation reduction potential (ORP) shift in the treatment liquid beverage whose pH substantially remain constant under a combined effect of the field strength of the pulsating capacitive field and the biased DC component.

15. The method of claim 14, comprising the step of measuring a conductivity of the liquid beverage for selecting the emitters adapted for the treatment of the liquid beverage.

16. The method of claim 14, further comprising the step of determining a degree of energization, preferably a degree of non-thermal energization, of the treatment liquid beverage, as a feedback control for the beverage treatment.

17. The method of claim 16, wherein the determination step comprises:

taking a plurality of consecutive samples from the treatment liquid beverage,

obtaining a plurality of FTIR spectra which represent respectively the plurality of consecutive samples,

mapping and analysis of the plurality of FTIR spectra for a same absorbance peak to collect information on peak height of the same absorbance peak, and

determining a maximum vertical variation of the peak height based on the lowest and highest peak heights of the same absorbance peak,

wherein the maximum vertical variation of the peak height reflects the degree of energization of the treatment liquid beverage.

18. The method of claim 17, wherein OH bond absorbance peak is mapped and analyzed.

19. The method of any one of claims 14 to 18, wherein the time-varying frequency and pulsating AC wave current and the DC component of the generated field are provided to energize the treatment beverage such that one or more treatment effects are induced in the treatment liquid beverage.

20. The method of claim 19, wherein the treatment effects comprise one or more of the following:

1) reducing throat burning sensation of the treatment liquid beverage,

2) reducing astringency of the treatment liquid beverage,

3) increasing body fat/lipid burn metabolism through consumption of the treatment liquid beverage;

4) reducing harmful toxin effect of the treatment liquid beverage if alcoholic component is present, and

5) facilitating ageing effect of the treatment liquid beverage if alcoholic component is present.

21. The method of any one of claims 14 to 18, further comprising the step of real-time monitoring and measuring the ORP of the treatment liquid beverage.

22. The method of any one of claims 14 to 18, wherein each two adjacent capacitive emitters are spaced at a distance of less than 10 mm, preferably less than 6 mm.