CLAIMS:

1. A method for cleaning vias, trenches or recessed areas on a substrate using an ultra/mega sonic device, comprising:

applying liquid into a space between a substrate and an ultra/mega sonic device;

setting an ultra/mega sonic power supply at frequency f_1 and power P_1 to drive said ultra/mega sonic device;

after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate increasing to a first set value, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device;

after the ratio of total bubbles volume to volume inside the vias, trenches or recessed areas reducing to a second set value, setting said ultra/mega sonic power supply at frequency f_1 and power P_1 again;

repeating above steps till the substrate being cleaned.

2. The method of claim 1, wherein the second set value is much lower than a cavitation saturation point.

3. The method of claim 1, wherein the first set value is below a cavitation saturation point.

4. The method of claim 1, wherein the first set value is a cavitation saturation point.

5. The method of claim 4, wherein even after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate reaches to the cavitation saturation point, the ultra/mega sonic power supply is still kept at frequency f_1 and power P_1 for period of $m\tau_1$, here τ_1 is the time to reach the cavitation saturation point, m is multiples of τ_1, after then, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device.

6. The method of claim 5, wherein m is a number between 0.1 to 100.

7. The method of claim 1, wherein time interval between setting said power supply at frequency f_1 and power P_1 and setting said ultra/mega sonic power supply at frequency f_2 and power P_2 is shorter than $((V_i - V_0 - \Delta V)/(\Delta V - \delta V) + 1)/f_1$, where V_i is a desired volume, V_0 original volume, ΔV volume compression

of the bubble after one time of compression, δV volume increase of the bubble after one time of expansion.

8. The method of claim 1, wherein said power value P_2 is set as zero.

9. An apparatus for cleaning vias, trenches or recessed areas on a substrate using an ultra/mega sonic device, comprising:

a chuck holding a substrate;

an ultra/mega sonic device being positioned adjacent to the substrate;

at least one nozzle injecting chemical liquid on the substrate and a gap between the substrate and the ultra/mega sonic device;

an ultra/mega sonic power supply;

a controller setting the ultra/mega sonic power supply at frequency f_1 and power P_1 to drive said ultra/mega sonic device; after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate increasing to a first set value, setting the ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device; after the ratio of total bubbles volume to volume inside the vias, trenches or recessed areas reducing to a second set value, setting the ultra/mega sonic power supply at frequency f_1 and power P_1 again; repeating above steps till the substrate being cleaned.

10. The apparatus of claim 9, wherein the second set value is much lower than a cavitation saturation point.

11. The apparatus of claim 9, wherein the first set value is below a cavitation saturation point.

12. The apparatus of claim 9, wherein the first set value is a cavitation saturation point.

13. The apparatus of claim 12, wherein even after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate reaches to the cavitation saturation point, the ultra/mega sonic power supply is still kept at frequency f_1 and power P_1 for period of $m\tau_1$, here τ_1 is the time to reach the cavitation saturation point, m is multiples of τ_1, after then, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device.

14. The apparatus of claim 13, wherein m is a number between 0.1 to 100.

15. The apparatus of claim 9, wherein time interval between setting said power supply at frequency f_1 and power P_1 and setting said ultra/mega sonic power supply at frequency f_2 and power P_2 is shorter than $((V_i - V_0 - \Delta V)/(\Delta V - \delta V) + 1)/f_1$, where V_i is a desired volume, V_0 original volume, ΔV volume compression of the bubble after one time of compression, δV volume increase of the bubble after one time of expansion.

16. The apparatus of claim 9, wherein said power value P_2 is set as zero.

17. An apparatus for cleaning vias, trenches or recessed areas on a substrate using an ultra/mega sonic device, comprising:

a cassette holding at least one substrate;

a tank holding said cassette;

an ultra/mega sonic device being attached to outside wall of said tank;

at least one inlet for filling chemical liquid into said tank to immerse said substrate;

an ultra/mega sonic power supply;

a controller setting an ultra/mega sonic power supply at frequency f_1 and power P_1 to drive said ultra/mega sonic device; after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate increasing to a first set value, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive ultra/mega sonic device; after the ratio of total bubbles volume to volume inside the vias, trenches or recessed areas reducing to a second set value, setting said ultra/mega sonic power supply at frequency f_1 and power P_1 again; repeating above steps till the substrate being cleaned.

18. The apparatus of claim 17, wherein the second set value is much lower than a cavitation saturation point.

19. The apparatus of claim 17, wherein the first set value is below a cavitation saturation point.

20. The apparatus of claim 17, wherein the first set value is a cavitation saturation point.

21. The apparatus of claim 20, wherein even after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate reaches to the cavitation saturation point, the ultra/mega sonic power supply is still kept at frequency f_1 and power P_1 for period of $m\tau_1$, here τ_1 is the time to reach the

cavitation saturation point, m is multiples of τ_1, after then, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device.

22. The apparatus of claim 21, wherein m is a number between 0.1 to 100.

23. The apparatus of claim 17, wherein said power value P_2 is set as zero.

24. An apparatus for cleaning vias, trenches or recessed areas on a substrate using an ultra/mega sonic device, comprising:

a chuck holding a substrate;

an ultra/mega sonic device coupled with a nozzle being positioned adjacent to the substrate, said nozzle injecting chemical liquid on the substrate;

an ultra/mega sonic power supply;

a controller setting the ultra/mega sonic power supply at frequency f_1 and power P_1 to drive said ultra/mega sonic device; after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate increasing to a first set value, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device; after the ratio of total bubbles volume to volume inside the vias, trenches or recessed areas reducing to a second set value, setting said ultra/mega sonic power supply at frequency f_1 and power P_1 again; repeating above steps till the substrate being cleaned.

25. The apparatus of claim 24, wherein the second set value is much lower than a cavitation saturation point.

26. The apparatus of claim 24, wherein the first set value is below a cavitation saturation point.

27. The apparatus of claim 24, wherein the first set value is a cavitation saturation point.

28. The apparatus of claim 27, wherein even after the ratio of total bubbles volume to volume inside vias, trenches or recessed areas on the substrate reaches to the cavitation saturation point, the ultra/mega sonic power supply is still kept at frequency f_1 and power P_1 for period of $m\tau_1$, here τ_1 is the time to reach the cavitation saturation point, m is multiples of τ_1, after then, setting said ultra/mega sonic power supply at frequency f_2 and power P_2 to drive said ultra/mega sonic device.

29. The apparatus of claim 28, wherein m is a number between 0.1 to 100.

30. The apparatus of claim 24, wherein said power value P_2 is set as zero.