CLAIMS

1. A process for pre-treating an organic waste, comprising the steps of:

(i) providing an organic waste;

(ii) treating the organic waste with ultrasound and a first dose of an alkaline and/or peroxide composition; and

(iii) adding a second dose of the alkaline and/or peroxide composition after a period of time, while continuing treatment of the waste with ultrasound, wherein

in step (ii) the treatment of the organic waste with ultrasound and the first dose of an alkaline composition are started simultaneously or concomitantly, wherein the alkaline and/or peroxide composition is in a concentration sufficient to provide a concentration of from 0.01M to 0.1M of the alkaline and/or peroxide composition when added to the organic waste.

2. The process of Claim 1, wherein the ultrasound treatment has a power density of from 0.5 to 3 W/mL.

3. The process of Claim 2, wherein the ultrasound treatment has a power density of from 0.7 to 2.8 W/mL.

4. The process of Claim 3, wherein the power density is 0.7 W/mL, 1.4 W/mL or 2.8 W/mL.

5. The process of Claim 4, wherein the ultrasound treatment has a power density of 0.7 W/mL.

6. The process of any preceding claim, wherein the organic waste is subjected to treatment with ultrasound for a total time of from 5 minutes to 1 hour.

7. The process of Claim 6, wherein the organic waste is subjected to treatment with ultrasound for a total time of from 7 minutes to 18 minutes.

8. The process of Claim 7, wherein the organic waste is subjected to treatment with ultrasound for a total time of 9 minutes.

9. The process of any preceding claim, wherein the organic waste is subjected to treatment with ultrasound that is conducted at a frequency of from 19 kHz to 200 kHz.

10. The process of Claim 9, wherein the organic waste is subjected to treatment with ultrasound that is conducted at a frequency of about 20 kHz.

11. The process of any preceding claim, wherein the alkaline composition is lime or a metal hydroxide and the peroxide composition is hydrogen peroxide.

12. The process of Claim 11, wherein the metal hydroxide is KOH, $Mg(OH)_2$ or NaOH.

13. The process of Claim 12, wherein the metal hydroxide is NaOH.

14. The process of any preceding claim, wherein the alkaline and/or peroxide composition is in a concentration sufficient to provide a concentration of from 0.02M to 0.05M of the alkaline and/or peroxide composition when added to the organic waste.

15. The process of Claim 14, wherein the alkaline and/or peroxide composition is in a concentration sufficient to provide a concentration of 0.02M of the alkaline and/or peroxide composition when added to the organic waste.

16. The process of any preceding claim, wherein each dose of the alkaline and/or peroxide composition is from 0.025 g/gTS to 0.5 g/gTS.

17. The process of Claim 16, wherein each dose of the alkaline and/or peroxide composition is from 0.05 g/gTS to 0.25 g/gTS.

18. The process of any preceding claim, wherein the process further comprises the addition of further doses of the alkaline composition after a period of time, while continuing treatment of the waste with ultrasound.

19. The process of any preceding claim, wherein the period of time is from 2 to 10 minutes from the addition of the previous dose of alkaline material.

20. The process of Claim 19, wherein the period of time is from 3 to 7 minutes from the addition of the previous dose of alkaline material.

21. The process of Claim 20, wherein the period of time is about 5 minutes from the addition of the previous dose of alkaline material.

22. The process of any preceding claim, wherein the process further comprises feeding the pre-treated organic waste into an aerobic or an anaerobic digester.

23. The process of Claim 22, wherein the anaerobic digester is a mesophilic anaerobic digester or a thermophilic anaerobic digester.

24. The process of any preceding claim, wherein the organic waste is one or more selected from the group consisting of a sludge, food waste, oily waste, solid waste with a high organic content and any combination thereof.

25. The process of Claim 24, wherein the sludge is a waste activated sludge or a primary sludge.

26. The process of any preceding claim, wherein the total solids content of the organic waste is from 0 to 50 g/L.