

Optimization of NaOH Thermo-Chemical Pretreatment to Enhance Solubilisation of Organic Food Waste by Response Surface Methodology

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Abstract : This study investigates the influence of low temperature thermo-chemical pretreatment of organic food waste on the performance of COD solubilisation. Both temperature and alkaline agent were reported to have an effect on solubilizing any possible biomass including organic food waste. The three independent variables considered in this pretreatment were temperature (50-90oC), pretreatment time (30-120 minutes) and alkaline concentration, sodium hydroxide, NaOH (0.7-15 g/L). The optimal condition obtained were 90oC, 15 g/L NaOH for 2 hours. Solubilisation has potential in enhancing methane production by providing a high amount of soluble components at an early stage during anaerobic digestion.

Keywords : food waste, pretreatments, respond surface methodology, ANOVA, anaerobic digestion

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