World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Optimization of Process Parameters Affecting Biogas Production from Organic Fraction of Municipal Solid Waste via Anaerobic Digestion

Authors : B. Sajeena Beevi, P. P. Jose, G. Madhu

Abstract : The aim of this study was to obtain the optimal conditions for biogas production from anaerobic digestion of organic fraction of municipal solid waste (OFMSW) using response surface methodology (RSM). The parameters studied were initial pH, substrate concentration and total organic carbon (TOC). The experimental results showed that the linear model terms of initial pH and substrate concentration and the quadratic model terms of the substrate concentration and TOC had significant individual effect ($p < 0.05$) on biogas yield. However, there was no interactive effect between these variables ($p > 0.05$). The highest level of biogas produced was 53.4 L/Kg VS at optimum pH, substrate concentration and total organic carbon of 6.5, 99gTS/L, and 20.32 g/L respectively.

Keywords : anaerobic digestion, biogas, optimization, response surface methodology
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020