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# Prerequisite – an electrohydrolysis pretreatment for anaerobic digestion of lignocellulose waste material

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**Abstract:**

This novel work is focused on evaluating the electrohydrolysis pretreatment conditions (applied voltage and time) and anaerobic digestion process for the biological bioconversion of pulp and paper mill sludge into biogas in batch assay. The pretreatment at 15 V for 45 min shows highest impact on sludge solubilization. The XRD and FT-IR spectroscopic characterization shows the development of aliphatic, unsaturated and carbonyl carbon functionalities in the pretreated samples. FESEM picture also qualities the change in alteration of structure after pretreatment. Batch anaerobic bioreactor was carried out to determine the efficacy of electrohydrolysis pretreated and untreated pulp and paper mill sludge. The methane production potential was increased from 274±5 to 301±4 mL $CH_4$/g VS after electrohydrolysis pretreatment.

**Keywords:** Electrohydrolysis; hydrolysis; pretreatment; anaerobic digestion; lignocellulose material: