



“CLEANER PRODUCTION TOWARDS A SUSTAINABLE TRANSITION”

Comparative Study of Methods for the Synthesis of Silica Gel from Biomass Residue Ash of Sugarcane

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Abstract

Biomass residue ash of cane sugar (ACS) was used on synthesis of silica xerogel (SG) by three different routes. SG was produced using alkaline extraction followed by acid precipitation. The process of synthesis was optimized by applying a wide range of experimental conditions. No SG was obtained using classic hydrothermal treatment for silica extraction. SG was successfully synthesized via fusion with NaOH followed by hydrothermal reaction used to prepare sodium silicate solution. The best condition for silica gel production was achieved with gelation of silica carried out at 80 °C. Our experimental data suggest that the ACS could be converted into a value added product, minimizing the environmental impact of disposal problems.

Keywords: *Silica xerogel; Biomass residue ash; Sugarcane.*