

Effect of Liquid Additive on Dry Grinding for Desired Surface Structure of CaO Catalyst

Authors : Wiyanti Fransisca Simanullang, Shinya Yamanaka

Abstract : Grinding method was used to control the active site and to improve the specific surface area (SSA) of calcium oxide (CaO) derived from scallop shell as a sustainable resource. The dry grinding of CaO with acetone and tertiary butanol as a liquid additive was carried out using a planetary ball mill with a laboratory scale. The experiments were operated by stepwise addition with time variations to determine the grinding limit. The active site of CaO was measured by X-Ray Diffraction and FT-IR. The SSA variations of products with grinding time were measured by BET method. The morphology structure of CaO was observed by SEM. The use of liquid additive was effective for increasing the SSA and controlling the active site of CaO. SSA of CaO was increased in proportion to the amount of the liquid additive and the grinding time. The performance of CaO as a solid base catalyst for biodiesel production was tested in the transesterification reaction of used cooking oil to produce fatty acid methyl ester (FAME).

Keywords : active site, calcium oxide, grinding, specific surface area

Conference Title : ICNSE 2017 : International Conference on Nanomaterials Science and Engineering

Conference Location : Bali, Indonesia

Conference Dates : October 23-24, 2017