

Extraction of silica from palm ash using organic acid leaching treatment

Abstract

Agricultural wastes such as palm ash and rice husk have a possibility to be used as a usefully renewable source for production of energy and silica (SiO_2). Extensive researches have been carried out to extract silica from agricultural wastes such as rice husk, due to silica as a useful raw material for industrial application. In the previous studies, the strong acid leaching treatment was carried out to remove metallic impurities and organics contained in rice husk. A strong acid leaching treatment, however, is significantly hazardous to the environment and people [. In this study, the environmentally benign and economically effective process to produce SiO_2 materials from palm ash has been established by using citric acid leaching, not the conventional strong acids. Results showed that silica can be extracted from palm ash using citric acid leaching treatment under the optimum extracting conditions with 70°C of solution temperature, 60 minutes of reaction time and concentration of citric acid of more than 2%. The purity of silica extracted is more than 90%.

Keywords; Agricultural Wastes, Organic Acid, Palm Ash, Silica