

FABRICATION OF PRECIPITATED CALCIUM CARBONATE (PCC) BASED SUPERHYDROPHOBIC GLOVES FROM SRI LANKAN DOLOMITE

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Manufacturing bioinspired superhydrophobic covering on natural rubber gloves surface from Sri Lankan dolomite as a value-added process to local dolomite. In this study, we introduce a simple and effective method to synthesize superhydrophobic coating on glove surfaces using superhydrophobic precipitated calcium carbonate nanoparticles (nPCC) using dolomite as the raw material. Sodium stearates were used as a binder, while fatty acid was used to improve the superhydrophobicity. nPCC suspension was made with ethyl acetate, and it was applied on the glove surfaces *via* spray coating and dip coating methods. The products were subjected to scanning electron microscopy (SEM) to identify the morphology of nPCC and coating. SEM images confirm the presence of nano coating on PCC (1-100 nm) and on the glove surface (200 nm). Fourier Transform Infrared Spectroscopy (FTIR) was used to identify functional groups on surface coating, which confirmed the presence of stearates, ethyl acetate and fatty acid on the glove surfaces, while water contact angles were measured using a drop shape analyzer. In spray coating methods, obtained contact angles on glove surfaces were 142° for stearic modified and 144.5° for stearic/fatty acid-modified coating. It was 154.7° for dip coating methods. According to the results, stearates and fatty acids improve superhydrophobicity, while ethyl acetate gives a uniform nanoparticle suspension. Among the coating methods compared, spray coating gave a uniform coating on the glove surface.

Keywords: Fatty acid, Gloves, PCC, Stearic acid, Superhydrophobicity