

The potential of geopolymer-optical fiber composite as a light transmitting material

Abstract

The main objective of this study is to synthesize geopolymer-optical fiber composite and its potential as a light transmitting material. Geopolymer synthesized through alkali activated method of metakaolin incorporated with a certain amount of bare optical fiber. The mechanical properties of the composite were characterized through flexural and compressive strength measurement. The chemical compositions of the starting materials were characterized by means of X-Ray Diffraction (XRD) and Energy Dispersive Spectroscopy (EDS). The microstructure of the resulting composites was studied by using Scanning Electron Microscopy (SEM). The light properties of the specimens were measured by using a lux meter. It was found that the addition of the optical fiber did not influence the overall mechanical properties of geopolymer matrix. The intensity of light transmitted in the composite decrease due the light absorption by the matrix of geopolymer. The results of this study offer a new insight into the potential of geopolymer-optical fiber as a potential light transmitting material for wide range applications.