

Characteristics of Nanosilica-Geopolymer Nanocomposites and Mixing Effect

Authors : H. Assaedi, F. U. A. Shaikh, I. M. Low

Abstract : This paper presents the effects of mixing procedures on mechanical properties of flyash-based geopolymer matrices containing nanosilica (NS) at 0.5%, 1.0%, 2.0%, and 3.0% by wt.. Comparison is made with conventional mechanical dry-mixing of NS with flyash and wet-mixing of NS in alkaline solutions. Physical and mechanical properties are investigated using X-Ray Diffraction (XRD) and Scanning Electron Microscope (SEM). Results show that generally the addition of NS particles enhanced the microstructure and improved flexural and compressive strengths of geopolymer nanocomposites. However, samples prepared using dry-mixing approach demonstrate better physical and mechanical properties than wet-mixing of NS.

Keywords : geopolymer, nano-silica, dry mixing, wet mixing, physical properties, mechanical properties

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