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Using Different Methods of Nanofabrication as a New Way to Activate Cement Replacement Materials in Concrete Industry

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Abstract : One of the most important industries and building operations causing carbon dioxide emission is the cement and concrete related industries so that cement production (including direct fuel for mining and transporting raw material) consumes approximately 6 million Btus per metric-ton, and releases about 1 metric-ton of CO2. Reducing the consumption of cement with simultaneous utilizing waste materials as cement replacement is preferred for reasons of environmental protection. Blended cements consist of different supplementary cementitious materials (SCM), such as fly ash, silica fume, Ground Granulated Blast Furnace Slag (GGBFS), limestone, natural pozzolans, etc. these materials should be chemically activated to show effective cementitious properties. The present review article reports three different methods of nanofabrication that were used for activation of two types of SCMs.

Keywords : nanofabrication, cement replacement materials, activation, concrete
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