

## Incorporation of nano TiO<sub>2</sub> in black rice husk ash mortars

### ABSTRACT

In this study, untreated black rice husk ash (BRHA) was employed as cement replacement in fractions of 10%, 20% and 30%. Dosages of 0.5%, 1.0% and 1.5% nano TiO<sub>2</sub> were added into blended cement to study the mechanical properties and microstructural changes in mortars. The mechanical properties were studied using compressive and ultrasonic pulse velocity tests. XRD, SEM, TGA and DSC were conducted to investigate the chemical composition and microstructural changes of BRHA mortars with the presence of nano TiO<sub>2</sub>. The results showed that nano TiO<sub>2</sub> in BRHA blended cement improved the mechanical properties and microstructure of BRHA mortars.

**Keyword:** Black rice husk ash; Nano TiO<sub>2</sub>; Mechanical properties; Chemical composition; Microstructure; Mortars