

## **Development and properties of coconut fiber reinforced composite cement with the addition of fly ash**

### **Abstract**

In this paper, the effectiveness utilization of agricultural wastes and industrial wastes in the composite cement has been studied in terms of physical and mechanical properties. Twenty weight percent of fly ash and 80 wt.% of sand were added in the composite cement. Different weight percentages of coconut fiber (3, 6, 9, 12, and 15 wt. %) were added in the composition as reinforcement for cement composites. Water to cement ratio ranging from 0.55 to 0.70 was added into the cement composites accordingly to maintain their workability. Then, the cement composites were cured in water for 7, 14, and 28 days. Results for physical properties (density, moisture content, and water absorption) and mechanical properties (compressive strength and modulus of rupture) are presented.

**Keywords** — Fly ash, compressive strength, water absorption, moisture content, modulus of rupture, density.