**Development of a Novel Hybrid column- Aggregate Concrete in-fill Fibre Reinforced Polymer (FRP)**

**Abstract**. The essence of modern civil engineering involves simplification of construction processes and producing economically viable construction materials which are environmentally friendly i.e. energy efficient and aesthetically appealing while maintaining the structural integrity of material and civil engineering infrastructure. Research have shown fibre reinforced polymer (FRP) as a sustainable light weight construction material. However the applications of FRP has not be fully explored in the aspect of its behaviour when in-filled with recycled concrete aggregate (RCA). Energy savings can be enhanced by reduction in the self-weight of structures.  This research develops a hybrid light weight concrete in-fill fibre reinforced polymer (LCIFRP) prototype column. The LCIFRP in filled with recycled aggregate concrete which is light-weight with equivalent strength of normal concrete. Pultruded FRP profiles of 60 × 60 × 4.25 mm, 76 × 76 × 6.35 mm and 101 × 101 × 6.35 mm are used. The hybrid prototype’s mechanical behaviour is explored under axial compression loading condition in comparison with same profile size filled with normal concrete. This research takes into account the effects of RAC and FRP confinement as reinforcement. It also investigates the influence of pre-wetting, RCA age, and RCA shrinkage. Analytical, numerical (finite element) and experimental investigation was compared to establish the composite action in the hybrid column. This is an on-going PhD research.