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Prediction of Mechanical Strength of Multiscale Hybrid Reinforced Cementitious Composite

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Abstract : Novel multiscale hybrid reinforced cementitious composites based on carbon nanotubes (MHRCC-CNT), and carbon nanofibers (MHRCC-CNF) are new types of cement-based material fabricated with micro steel fibers and nanofilaments, featuring superior strain hardening, ductility, and energy absorption. This study focused on established models to predict the compressive strength, and direct and splitting tensile strengths of the produced cementitious composites. The analysis was carried out based on the experimental data presented by the previous author's study, regression analysis, and the established models that available in the literature. The obtained models showed small differences in the predictions and target values with experimental verification indicated that the estimation of the mechanical properties could be achieved with good accuracy.

Keywords : multiscale hybrid reinforced cementitious composites, carbon nanotubes, carbon nanofibers, mechanical strength prediction
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