

## بيانات عن بحث (4) مقدم للترقية

### **Experimental Investigation on the Effect of Using Crumb Rubber and Recycled Aggregate on the Mechanical Properties of Concrete**

In this paper, the effect of utilizing crumb rubber (CR) and recycled coarse aggregate (RCA) as partial replacements for fine aggregate (FA) and coarse aggregate (CA), respectively in concrete on the mechanical properties of concrete was experimentally investigated. The experimental work was carried out on 84 concrete cylinder (150x300 mm in size) at different levels of replacement of FA and CA with CR and RCA, respectively. The mechanical properties of concrete were measured at 28 days. The utilization of CR and RCA showed a marked influence on the mechanical properties of concrete especially in the case of FA replacement with CR. Eight effective predictive models utilizing multivariate regression to estimate the compressive strength and splitting tensile strength of concrete containing CR and RCA as partial replacement of FA and CA, respectively at 28 days were proposed. The input parameters were: a) level of replacement of CA with RCA, and b) Level of replacement of FA with CR. The output parameters were compressive and splitting tensile strengths. The models were compared to find the best one. As compared to other proposed models, the full quadratic model had the highest correlation in both cases of compressive and splitting tensile strength models.