1- عنوان البحث

عنوان البحث
Optimizing shielding properties of strength enhanced concrete containing marble **تحسين خصائص التدريع للخرسانة المحسنة التي تحتوي على الرخام**

2- البيانات الخاصة بالنشر

إسم المجلة	**Papers in Physics**
رقم المجلد	This research has been accepted for publication and will appear this year 2020
تاريخ النشر	
منهجية البحث	دراسة تجريبية ونظرية

4- ملخص البحث باللغة الإنجليزية

The purpose of this study was to develop a low cost and locally produced concrete mixture with an optimum marble content that has enhanced strength properties comparable to that of the non-marble reference concrete and preferable radiation shielding properties. To accomplish these goals five concrete mixtures containing 0, 5, 10, 15, and 20% marble waste powder as cement replacement by weight basis have been prepared. These samples were subjected to a compression strength test.

The shielding parameters such as mass attenuation coefficients μ_m, mean free path MFP, effective atomic number Z_eff and exposure build-up factors EBF have been measured and results were compared with that obtained by using WinXcom, and MCNPX code in the photon energy range (0.015 – 3 MeV). Moreover, the macroscopic fast neutrons removal cross-section (neutron attenuation coefficient) was calculated and results were presented.

The results show that the sample which contains 10% marble has the highest compression strength and potentially good gamma rays and neutrons radiation shielding properties.