

## **The Third Article**

### **Number (17) In The List of Total Publications**

M.M.S. Wahsh<sup>a</sup>, A.G.M. Othman<sup>a</sup>, **S. Abd El-Aleem<sup>b</sup>**, “The influence of nano-silica and zircon additions on the sintering and mechanical properties of in situ formed forsterite”, Journal of Industrial and Engineering Chemistry; 20 (2014), pp. 3984-3988.

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#### **Abstract**

The influence of nano-silica and zircon additions on the sintering and mechanical properties of in situ formed forsterite fired at 1550°C for 2h was investigated. The results indicated that, nano-silica improved in situ formed forsterite at the firing temperature, while zircon additions enhanced the sintering of the investigated samples. XRD analysis and SEM examination observed a good crystallinity of in situ formed forsterite with nano-silica and/or zircon additions. Densification parameter (BD =3.22 g/cm<sup>3</sup> and AP =5.82%), cold crushing strength (CCS =285 MPa) and micro-hardness (Hv = 660) were enhanced with zircon additions.