**Simple Microwave Synthesis of Mn/Clay Nanocomposites and Investigation their Application for Hydrophobic surfaces**

Alireza Mohadesi1,\*, Fatemeh Gharaei1, Mehdi Ranjbar1,2

*1Department of Chemistry, Payame Noor University, Tehran 19395-4697, Iran*

*2Young Researcheres Society, Shahid Bahonar University of Kerman, Kerman, Iran*

*\* e-mail:* [*mohadesi\_a@yahoo.com*](mailto:mohadesi_a@yahoo.com)

***Abstract***

In this study, we applied a novel synthesis route for producing Mn-Clay nanocomposite by simple microwave method with the aid of bentonite clay. The effects of difference microwave powers on the morphology and particle size of final products were investigated. SEM results reveal that microwave power has undeniable impact on the morphology and particle size of final nanocomposite. Photoluminescence spectra show a blue shift when the nanoparticles are prepared in the presence of the clay minerals. The as-synthesized products were characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), and photoluminescence (PL) spectroscopy. The effect of power irradiation on morphology and structure of as-synthesized products was evaluated. The obtained results exhibited that the synthesized nanoparticles-like product in 600 W for 10 min showed excellent uniformity and quality. Furthermore, the water contact angel measurements were performed on as-synthesized products. The results showed due to introducing roughness by growth of on clay nanoparticles-like structure, all the samples show excellent degree of hydrophobicity and introducing these products on glass surfaces makes the glass superhydrophobic.

**Keywords:**

Mn/Clay Nanocomposites, Nanostructures, Microwave, Superhydrophobic