# Microwave Synthesis of Magnetic $Fe_3O_4$ Nanoparticles

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Magnetic nanoparticles play a major role in the emerging fields of nanotechnology to facilitate rapid advancements in biomedical and industrial platforms. The specific diverse applications of nanoparticles arise from the physical characteristics of the nanomaterials they are comprised of. Nanomaterials often reveal novel and distinct electrical, optical, magnetic and chemical properties as against their bulk materials. [1].

In the literature the methods of magnetic nanoparticles such as co-precipitation, thermal decomposition, microemulsion, hydrothermal, solvothermal, sol–gel, sonochemical, chemical vapor deposition, and ball milling are reviewed [2].

In this work, we present iron oxide nanoparticles (FeMgNP) synthesized in the organic medium by microwave technique using polyethylene glycol (PEG) agent, different synthesis time (from 1 to 120 min) and temperature (200, 220, 230, 250 ℃). Obtained nanoparticles were investigated using X-Ray spectroscopy, transmission electron microscopy (TEM).

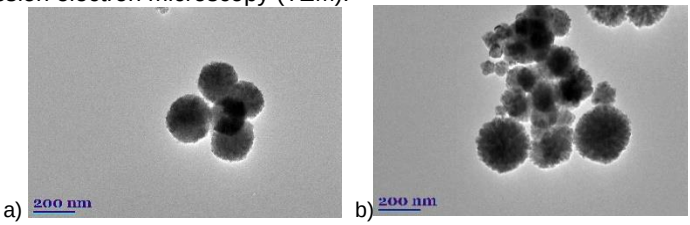


**Fig. 1.** TEM of FeMgNP with PEG (a) and without PEG (b)

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***References:***

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