CHARACTERIZATION OF Mn NANOPARTICLES DOPED WITH ND AND SYNTHETIZED BY SPRAY PYROLYSIS FOR CANCER TREATMENT BY HYPERTHERMIA

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Hyperthermia cancer therapy designed by magnetic nanoparticles has as main challenges the enhancement of heating power of such nanoparticles and the control of the local tumoral temperature. Thereby, the efficiency of magnetic hyperthermia is principally dependent on the proper determination of the nanoparticles features such as surface chemistry, intrinsic and extrinsic magnetic properties, features of the magnetic field that induces the heating power and hyperthermia temperature.

In this work Mn nanoparticles combined with Nd were synthesized by spray pyrolysis. MgCl₂ and NdCl₃ were commercially obtained by sigma Aldrich, aqueous solutions with different Mn and Nd molar concentration ratio. The nanoparticles were deposited in a Silicon oxide substrate at 150 °C. An average diameter of 100 nm for the obtained bimetallic nanoparticles was confirmed by electron microscopy images.

Atomic force microscopy showed spherical nanoparticles over all the substrate. The Dispersive Energy Spectroscopy (EDS) pattern confirms the expected elements in the corresponding ratios. X-ray diffraction (XRD) confirmed the phase of Mn and Nd.

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