

PB268- SYNTHESIS AND CHARACTERIZATION OF MANGANESE FERRITE $MnFe_2O_4$ NANOPARTICLES AND THEIR FUNCTIONALIZATION WITH CHITOSAN BIOPOLYMER

T. G. D. Ribeiro¹, M. C. F. C. Felinto¹, R. Stefani, H. F. Brito²

¹Instituto de Pesquisas Energéticas e Nucleares, São Paulo, SP, Brazil

²Instituto de Química - Universidade de São Paulo São Paulo, SP, Brazil
e-mail:mfelinto@ipen.br

Nanoparticles, especially magnetite nanoparticles (MNPs) and quantum dots (QDs), exhibit size-dependent properties largely different from their bulk counterparts, and thus have attracted world-wide interest in scientific fields as well as applications over past decade. Particularly, MNPs show widely potential applicable to be used in biomedical fields such as cell labeling and separation.

MNPs were synthesized by co-precipitation method. In this approach, $FeCl_3 \cdot 6H_2O$ and $MnCl_2 \cdot 4H_2O$ were dissolved in water, and co precipitated with several hydroxides and conditions. A magnetization is obtained when thermal treatment was applied. These materials were covered with a biopolymer, chitosan, to facilitate the recognizing of proteins.

The nanoparticles were characterized by elemental analyses SEM, X-ray powder diffraction, infrared spectra and magnetic measurements.

The results showed crystallites size equal to 39 nm and 44 nm to $MnFe_2O_4$ and $MnFe_2O_4@chitosan$ respectively as was expected.

Magnetic data showed a superparamagnetic behavior with the values of coercivity equal to 0 and saturation magnetization equal to and 53.7 and 38.5 respectively to $MnFe_2O_4$ and $MnFe_2O_4@chitosan$

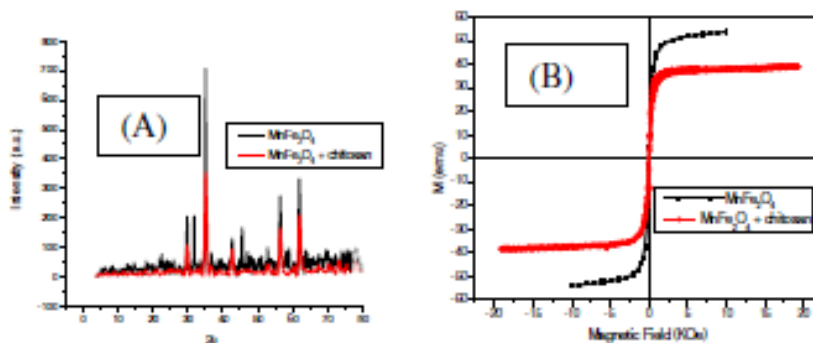


Figure 1 - X-ray powder diffraction and Magnetization curve of MNPs

CNPq/RENAMI/IMMC2/CAPES