

## RGD-functionalized magnetite nanoparticles for magnetic hyperthermia as a treatment for colon cancer.

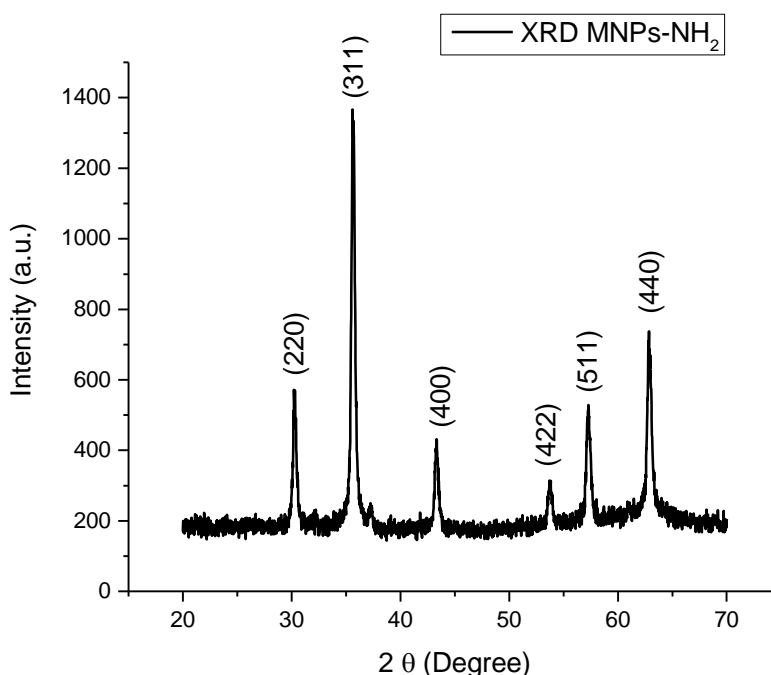
Luis Fernando Gómez<sup>1</sup>, Juan Luis Pichardo<sup>2</sup>, Gustavo Basurto<sup>1</sup>, Teodoro Córdova<sup>1</sup>

<sup>1</sup>División de Ciencias e Ingenierías, Universidad de Guanajuato, León, México

<sup>2</sup>Centro de Investigaciones en Óptica, León, México

Magnetite nanoparticles (MNPs) were functionalized with the RGD peptide by their ability to interact with the  $\alpha v \beta 3$  integrin, highly expressed in several cancer cells, such as gliomas, breast cancer and colon cancer [1]. The nanoparticles were characterized by electron microscopy, FTIR and XRD (Figure 1) to observe their chemical composition.

For this method to be applicable, the amount of MNPs used must be minimized. Therefore, it is essential to improve the power dissipation or heating efficiency of the MNPs [2]. Because of this the MNPs were stimulated at different frequencies between 80 and 500 kHz to observe where the heating is more optimal.



**Figure 1.** Left to right: portraits of A. Avogadro, G. Ferraris and J.-L. Lagrange.

[1] Zhang F., et al. Noninvasive monitoring of orthotopic glioblastoma therapy response using RGD-conjugated iron oxide nanoparticles. *Biomaterials* 33 (2012) 5414-5422.

[2] Obaidat Ihab M., et al. Magnetic Properties of Magnetic Nanoparticles for Efficient Hyperthermia. *Nanomaterials* 5 (2015), 63-89.