

Study of Ti diffusion in bones by spatially resolved μ XRF

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In this work, we studied the diffusion of titanium in the shinbone of lab rats as it was in need by a group of dentists of the Catholic University of Córdoba (UCC). Their interest in this study arised because osseointegrated dental implants are usually made with Ti, and there exists evidence that the concentration of Ti in gingival fluid of patients with dental implants is larger than in those patients without [1].

The spatially resolved μ XRF measurements of the shinbones of the lab rats with titanium implants were performed in the D09B XRF beamline of the LNLS. The time dependent diffusion coefficients were obtained through diffusion theory using the net intensities of the Ti and Ca peaks, being the first values ever reported [2].

[1] Abraham, J., Sánchez, H.J., Grenón, M.S. and Pérez, C.A., X Ray Spectrometr. 43 193-197 (2014).

[2] Grenón M.S., Robledo, J.I., Ibanez, J.C., Sánchez H.J., Journal of Microscopy 00 1-7 (2016).