

5th World Congress on

Materials Science & Engineering

June 13-15, 2016 Alicante, Spain

A new biomaterial in the subsystem nurse's A-phase-silicocarnotite

P N De Aza¹, G J Lugo¹, P Mazón¹ and L Meseguer-Olmo²¹Universidad Miguel Hernández, Spain²Universidad Católica San Antonio de Murcia, Spain

The subsystem Nurse's A-phase-silicocarnotite within the system $\text{Ca}_3(\text{PO}_4)_2\text{-Ca}_2\text{SiO}_4$ was conducted as a preliminary step towards obtaining new biomaterials with controlled microstructures. The subsystem have been investigated, via annealing and quenching in the experimental method, direct observation of phase composition of the resulting ceramics was studied by X-ray diffraction, differential thermal analysis and by scanning electron microscopy with attached wavelength dispersive spectroscopy. The results showed that the sub-system presents an invariant eutectoid point at $1366\pm 4^\circ\text{C}$ with a composition of 59.5 wt% $\text{Ca}_3(\text{PO}_4)_2$ and 40.5 wt% Ca_2SiO_4 . These results were in disagreement with the previous reported data, which locate the invariant point at $1250\pm 20^\circ\text{C}$ and a composition of 55 wt% $\text{Ca}_3(\text{PO}_4)_2$ and 45 wt% Ca_2SiO_4 . In addition, cell attachment test showed that the new eutectoid material supported the mesenchymal stem cells adhesion and spreading, and the cells established close contact with the ceramic after 28 days of culture. These findings indicate that the new ceramic material with eutectoid microstructure of lamellae morphology possesses good bioactivity and biocompatibility and might be a promising bone implant material.

Biography

P N De Aza studied Chemistry at the Autonomia University of Madrid and Ceramic at the Santiago de Compostela University, where she received her Doctoral degree in 1995. She completed her Post-doctoral studies at the IRC in Biomaterials at the Queen Mary & Wetsfield College, University of London (U.K.) working on *in vitro* and *in vivo* behavior of bioceramics. Currently, she is the Chair of the Materials Science, Optic and Electronic Technology Department, Professor of Materials Science and Metallurgical Engineering and Researcher at the Bioengineering Institute at the Miguel Hernandez de Elche University.

Piedad@umh.es**Notes:**