

Synchrotron X-ray Absorption Spectroscopy Study of Local Structure in Hydroxyapatite Doped by Strontium

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Generally, the medical treatment of osteoporosis was used orally by strontium-base medicine because of its stimulative effect on bone formation. In this work, Hydroxyapatite-based bone (HAp) doped by Sr was investigated for the global structure by X-ray diffraction technique and the local structure by Synchrotron X-ray Absorption Spectroscopy technique. The Sr L₃-edge X-ray Absorption Near-Edge Structure (XANES) spectra were measured and compared with the simulated spectra. The results show that the local environment of Sr distribute on the different locations of Ca site in Hydroxyapatite material. The Sr was found to substitute on the two different Ca sites with the proportion around 70% in the calcium phosphate site (Ca1) and 30% in Ca2 site close to -OH group.

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