

SYNCHROTRON RADIATION XRF MICROPROBE STUDY OF HUMAN BONE TUMOR AND HUMAN FEMORAL HEAD SLICES

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Synchrotron radiation XRF (SR-XRF) microprobe at the Beijing Synchrotron Radiation Facility is described. The MDLs of trace elements were measured to determine the capability for biomedical specimen analysis. The changes of the trace elements and their ratios in the normal and tumor parts of a human osteosarcoma tissue were investigated (the following two figures). It was also found that our results were in agreement with those of other analytical methods, such as spectrophotometric analysis, NAA and PIXE as well as an early clinic study of serum. The trace element scanning analysis in parts of cancer tissue can offer valuable references of the cause, therapy and early diagnosis of cancer.

This paper also deals with the scanning of human femoral head slices with normal and osteoporosis by using SR-XRF microprobe technique. The quantitative computed tomography of elemental distribution such as Ca, P, K, Fe, Zn, Sr, and Pb in bone slice tissue including cartilage, substantial compact and substantial spongy is investigated.

Left figure: a human bone tumor slice

Right figure: Cu, Zn and Cu/Zn ratio of scanning of a bone tumor

