

PREVIEW

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The composition of asbestos bodies in human lungs

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The asbestos bodies (AB) form in the lungs as the result of an *in vivo* biomineralization process started by the alveolar macrophages in the attempt to isolate asbestos and become the actual interface between asbestos and the host organism. The AB are believed to be mainly composed of the Fe-proteins and mucopolysaccharides. However, the presence of hydroxyapatite and Fe-oxy(hydro)oxides, other than ferrihydrite (the mineral core of ferritin), has also been proposed. We performed synchrotron X-ray diffraction (XRD) and absorption (XAS) measurements to unravel the Fe form in the AB and to check the crystallinity of the inner fiber. XRD results revealed the presence of goethite and that the inner fiber (crocidolite) maintained a high degree of crystallinity despite the prolonged stay in the lungs (>10y). XAS results, on the other hand, revealed the co-existence of ferrihydrite and goethite. The results are discussed in terms of the higher toxicity of goethite with respect to ferrihydrite.