Structural Investigation of Amorphous Europium Metaphosphate by X-ray Diffraction

Mario Cannas, Enrico Manca[a], Gabriella Pinna, Marco Bettinelli[b], and Adolfo Speghini[b]

Dipartimento di Scienze Chimiche, Università di Cagliari, Italy
[a] Dipartimento di Scienze Fisiche, Università di Cagliari, Italy
[b] Istituto Policattedra, Facoltà di Scienze MFN, Università di Verona, Italy

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The local coordination of europium in vitreous Eu metaphosphate has been investigated, using information obtainable from crystalline EuP_3O_9. One glassy sample and one crystalline sample of nominal EuP_3O_9 composition were examined by X-ray diffraction. The description of the close coordination of Eu, deduced from the orthorhombic structure of the crystalline sample, was used as a model for the amorphous situation. Besides, as a monoclinic form of Eu metaphosphate is also reported to exist, a second model was deduced from this structure, starting from the isomorphous monoclinic Yb metaphosphate. Best fitting calculations indicated that orthorhombic coordination is the better model for the short range order of europium in the vitreous metaphosphate.

Reprint requests to Prof. M. Cannas; Fax: +39 070 675 8605, E-mail: cannas@vaxca1.unica.it