

XAFS study of Ce valence in the $\text{Ce}_{1-x}\text{Y}_x\text{Fe}_2$ system

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Abstract: Pseudo binary alloys like $\text{R}(\text{A}_{1-x}\text{B}_x)_2$ compounds are known to exhibit both negative and positive types of deviation from Vegard's law on substitution of 3d or 4f cations. CeNi_2 based alloys are known to be mixed valence compounds whereas CeFe_2 alloys are probably not. In this study we examine the influence of substitution of rare earth compounds rather than the 3d ions. Ce L_{III} absorption edge XAFS is measured in the single phase $\text{Ce}_{1-x}\text{Y}_x\text{Fe}_2$ system ($x = 0.0, 0.1, 0.2, 0.3$ and 0.7) using the super ACO synchrotron radiation facility at LURE. The spectra are discussed in terms of the change in the Ce valence as a result of progressive substitution by trivalent Y cation. The problem of Ce valence saturation is also addressed in this work. ?? 1995.

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