

EPMA determination of ternary Fe-M-Nb phase diagrams in the neighborhood of the Laves $(\text{Fe}_{1-x}\text{M}_x)_2\text{Nb}$ composition M=Co, Ni, Cu

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Three important ternary Fe-M-Nb systems with M= Co, Ni or Cu were investigated by EPMA (EDS and WDS) in order to improve/rise information for the respective phase diagrams. Our motivation is related to the fact that the three sets of Fe+M transition metals, in combination two-by-two with small amounts of niobium, form interesting magnetic systems that, in the surrounding area of the usually nonmagnetic Laves $(\text{Fe}_{1-x}\text{M}_x)_2\text{Nb}$, can exhibit potentially new attractive properties, as we studied elsewhere [1-2]. In order to get better knowledge of the phases present in that neighborhood and beyond, sets of the respective phases in equilibrium at 1000-1100°C were produced under specific ternary nominal compositions. The results were highly accurate, reproducing the respective nominal compositions of the synthetic samples. Such accuracy permitted the rising of partial or the whole (as for the Fe-Co-Nb) phase diagrams and in some cases confirming or refining or even suggesting major changes concerning the data available in the literature [3, 4].

Keywords: Laves phases, Fe-Co-Ni-Cu-Nb alloys, ternary phase diagrams,

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