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Characterization of Sintered Fe-Cr-Mn Powder Mixtures Containing Intermetallics

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Abstract : Intermetallic materials are among advanced technology materials that have outstanding mechanical and physical properties for high temperature applications. Especially creep resistance, low density and high hardness properties stand out in such intermetallics. The microstructure, mechanical properties of %88Ni-%10Cr and %2Mn powders were investigated using specimens produced by tube furnace sintering at 900-1300°C temperature. A composite consisting of ternary additions, a metallic phase, Fe ,Cr and Mn have been prepared under Ar shroud and then tube furnace sintered. XRD, SEM (Scanning Electron Microscope), were investigated to characterize the properties of the specimens. Experimental results carried out for composition %88Ni-%10Cr and %2Mn at 1300°C suggest that the best properties as 138,80HV and 6,269/cm3 density were obtained at 1300°C.

Keywords : composite, high temperature, intermetallic, sintering
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