

Phase Stability and Grain Growth Kinetics of Oxide Dispersed CoCrFeMnNi

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Abstract : The present study deals with phase evolution of oxide dispersed CoCrFeMnNi high entropy alloy as a function of amount of added Y₂O₃ during mechanical alloying and analysis of grain growth kinetics of CoCrFeMnNi high entropy alloy without and with oxide dispersion. Mechanical alloying of CoCrFeMnNi resulted in a single FCC phase. However, evolution of chromium carbide was observed after heat treatment between 1073 and 1473 K. Comparison of grain growth time exponents and activation energy barrier is also reported. Micro structural investigations, using electron microscopy and EBSD techniques, were carried out to confirm the enhanced grain growth resistance which is attributed to the presence oxide dispersoids.

Keywords : grain growth kinetics, mechanical alloying, oxide dispersion, phase evolution

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