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The Phase Stability and Mechanical Properties of $(Co_{40}Cr_{10}Fe_5Mo_5Ni_{40})_{82,20}Al_{17,80}$ Eutectic High Entropy Alloy

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Abstract

Eutectic high entropy alloys (EHEA's) have received great attention because of their good castability and excellent combination of ductility and strength properties. In this study, a new $(Co_{40}Cr_{10}Fe_5Mo_5Ni_{40})_{82,2}Al_{17,8}$ EHEA successfully designed and fabricated by vacuum arc melting method. EHEA was annealed at various temperatures (600-1200 ^{0}C) for 12 hours. The influence of annealing temperature on the microstructure, phase constituents and mechanical properties were investigated using X-ray diffraction (XRD), Rietveld analysis, scanning electron microscopy (SEM) and compression tests.

Keywords: Eutectic High Entropy Alloys; XRD; SEM; Rietveld Analysis

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