

SYNTHESIS AND CHARACTERIZATION OF NANOCRYSTALLINE COFEMNNIAL HIGH-ENTROPY ALLOY

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This paper aims at synthesizing and characterization of nanocrystalline CoFeMnNiAl high-entropy alloy (HEA), using mechanical alloying (MA) and spark plasma sintering (SPS). Effects of mechanical alloying time on the morphology of powders, crystallite size and lattice strain of the synthesized powders were investigated, using X-ray diffraction (XRD) and scanning electron microscope (SEM). Synthesized powders were then consolidated by means of spark plasma sintering (SPS). Effects of sintering temperature on the mechanical properties of CoFeMnNiAl alloy were studied as well. Results show that single phase high entropy alloy; with FCC structure is formed after 30 h of milling. Further increase in milling time is associated with the appearance of BCC phase. As well, results show that SPS temperature has significant influence on the phase composition and mechanical properties of the synthesized alloy.

Biography

Maryam Yazdan Mehr did her PhD at Delft University of Technology from 2011 to till 2015, associated with Professor Zhang and Professor van Driel in the ECTM group at TUDelft. During her PhD, she worked on Organic Materials Degradation in Solid State Applications. During this project, the reliability and degradation of LEDs was for the first time studied from both materials and system perspective. One of the greatest achievements in this project was developing a high accelerated ageing test methodology. The set-up and the concept are now being used by Philips Lighting. So far, she has published almost 16 journal papers, more than 10 conference papers, and a book chapter. After her PhD, she applied for an HTSM grant as a Post-doc and it was granted in 2016. In June 2017, she started her Post- doc project entitled Reliability of Optical Materials in LED-based Products under Harsh Environments in the group of Professor Zhang at TU Delft.

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