

Mardi 14 avril 2015 à 14h**Salle de réunion du SRMP – Bâtiment 520 - Pièce 109*****On the evolution and optimization
of Al-Co-Cr-Cu-Fe-Ni-Ti high entropy alloys******Anna Manzoni****Helmholtz-Zentrum Berlin für Materialien und Energie GmbH
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Widely investigated Al-Co-Cr-Cu-Fe-Ni-Ti high entropy alloys have been chosen for optimization of the microstructural and mechanical properties. The starting alloy is the equiatomic AlCoCrCuFeNi alloy which has been most studied since the HEA's introduction in the early 2000s. Different paths have been chosen for optimization, namely the decrease of segregating element Cu, the increase of oxidation protective elements Al and Cr and the approach towards a γ - γ' microstructure as can be found in Ni-based superalloys. Microscopical observation at different levels (optical microscopy, scanning electron microscopy, transmission electron microscopy and three dimensional atom probe) have been made for each optimization step and compared with results obtained by Vickers microhardness measurements. Out of five derivate alloys, i.e. AlCoCrFeNi, $\text{Al}_{23}\text{Co}_{15}\text{Cr}_{23}\text{Cu}_8\text{Fe}_{15}\text{Ni}_{16}$, $\text{Al}_8\text{Co}_{17}\text{Cr}_{17}\text{Cu}_8\text{Fe}_{17}\text{Ni}_{33}$, $\text{Al}_8\text{Co}_{17}\text{Cr}_{14}\text{Cu}_8\text{Fe}_{17}\text{Ni}_{33}\text{Mo}_1\text{Ti}_1\text{W}_1$ and $\text{Al}_{10}\text{Co}_{25}\text{Cr}_8\text{Fe}_{15}\text{Ni}_{36}\text{Ti}_6$ the most promising one has been chosen for further investigation.

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