
Contribution ID: **132** Type: **Poster**

# M2Po2D-04: Effect of annealing heat treatment on the low-temperature mechanical properties of high entropy alloy CoFeCrNiAl0.05Ti0.05

*Tuesday 11 July 2023 14:00 (2 hours)*

High entropy alloys （HEA）have high strength, toughness, hardness, and corrosion resistance, and are promising as engineering structural materials for low-temperature applications. In this work, high-entropy alloy CoFeCrNiAl0.05Ti0.05 ingots were prepared by vacuum melting, followed by cold rolling and heat treatment processes to produce samples, which were tested by an electronic universal testing machine at 77 K for their low-temperature mechanical properties. The tensile fracture morphology of CoFeCrNiAl0.05Ti0.05 was observed by the scanning electron microscope(SEM) and the microstructure was examined by X-ray diffractometer(XRD). The test results show that the annealing treatment resulted in a reduction in strength and an increase in plasticity of the high entropy alloy CoFeCrNiAl0.05Ti0.05. In the tensile test, the high entropy alloy at low temperature has higher strength and elongation than at room temperature. This shows that high entropy alloy CoFeCrNiAl0.05Ti0.05 have the potential to perform as it should at low temperatures.

**Author:** JIANG, Mingyue (Technical Institute of Physics and Chemistry， CAS)

**Co-authors:** SU, Haojian (Technical Institute of Physics and Chemistry，CAS)；WANG, Zekun (Technical Institute of Physics and Chemistry，CAS)；XIANG, Yue (Technical Institute of Physics and Chemistry，CAS)；HUANG, Chuanjun (Technical Institute of Physics and Chemistry， CAS)；ZHOU, Min (Technical Institute of Physics and Chemistry，CAS)；HUANG, Rongjin (Technical Institute of Physics and Chemistry，CAS)；LI, Laifeng (Technical Institute of Physics and Chemistry， CAS)

**Presenter:** JIANG, Mingyue (Technical Institute of Physics and Chemistry， CAS)

**Session Classification:** M2Po2D: Metallic, Ceramic, Composite and Polymeric Materials III