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## **P4.210 Fatigue behaviour of prospective fusion oxide dispersion strengthened CoCrFeNiMn high entropy alloy**

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Fatigue behaviour of the oxide dispersion strengthened CoCrFeNiMn high entropy alloy was characterised at the first time. The initial powder was prepared via mechanical alloying and the material densification was done by the SPS technique. A microstructure, as well as basic mechanical characteristics, were obtained from the tensile test. These data allowed to set parameters for fatigue experiments to be partially in the plastic regime. The fatigue data were obtained on the bars loaded in bending with  $R=0.1$  loaded up to the final fracture or 107 cycles. The fracture surfaces were analysed and fracture initiation places (origins) were identified. Frequently larger grains with extensive twinning formation were such origins. The TEM observation was conducted on the foils extracted from the fracture surfaces to confirm expected damage mechanism observed on the fracture surfaces. The oxide dispersion strengthened HEA was compared with a non-strengthened variant of the same alloy. The shift to higher stress levels for the same lifetime was observed for the strengthened high entropy alloy.

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