Project 26 - Deformation Mechanisms in Refractory-Based, Complex Concentrated Alloys (RCCAs)

Student: Francisco Gil Coury
Faculty: Michael Kaufman, Amy Clarke
Industrial Partners: AFRL (Kevin Chaput, Todd Bulter)
Project Duration: 2 years

Achievement

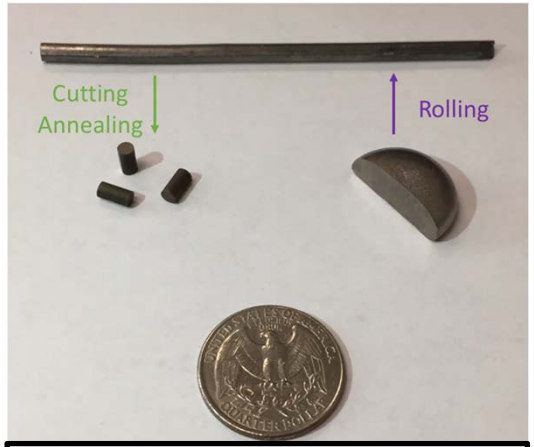
- Understanding strength and ductility of RCCAs

Significance and Impact

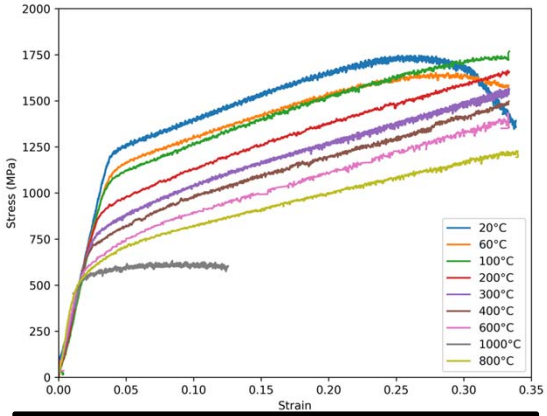
- Enable improved alloy design to achieve desirable ductility/strength combinations

Research Details

- Performed multi-scale microstructural characterization, thermodynamic simulations, and mechanical testing, coupled with strength and plasticity modeling



Processing arc-melted buttons



Mechanical tests at different temperatures

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Project Duration: 2 years

Achievement

- **Better understanding of phase equilibria in RCCAs (high entropy alloys, HEAs)**

Significance and Impact

- **Experimental results helping to improve RCCA/HEA thermodynamic databases**

Research Details

- **Performed multi-scale microstructural characterization of quaternary RCCAs and compared the results to thermodynamic simulations performed with Thermo-Calc**