PURDUE INNOVATES | Office of Technology Commercialization

Fabrication of RCCAs and RCCA/Ceramic Composites for High-Temperature Components and Devices

A new fabrication method yields oxidation- and corrosion-resistant alloys for aerospace, defense, and energy devices.

Researchers at Purdue University have developed a new method for fabricating refractory complex concentrated alloys (RCCAs, comprised of metals such as molybdenum, niobium, tantalum, and tungsten). These alloys have the potential for use in a myriad of advanced ultra-high-temperature components for military/defense, energy production, aerospace, and transportation applications. Current RCCAs and conventional superalloys undergo significant degradation in mechanical properties and corrosion resistance at temperatures well above 1200oC. The Purdue University approach yields RCCAs with tailorable structures and chemistries for enhanced high-temperature mechanical and chemical performance.

Advantages:

-Oxidation Resistant

-Corrosion Resistant

-Wear Resistant

-High Temperature Withstanding

-Tailorable Structure and Chemistry

Potential Applications:

-Energy Production

-Military/Defense -Aerospace

-Transportation (Marine, Car, Truck, Aircraft)

TRL: 2

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Category

Aerospace & Defense/Defense Electronics & Surveillance Technologies

Materials Science & Nanotechnology/Composites & Hybrid Materials

Further information

Will Buchanan

wdbuchanan@prf.org

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