Pacific Northwest NATIONAL LABORATORY

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Battelle Number(s):

16169 and 30020

Patent(s) Issued

Available for licensing in all fields

Available Technologies

Production of Nanocrystalline Metal Powders

SUMMARY

Nanocrystalline metal powders comprising tungsten, molybdenum, rhenium or niobium can be synthesized using a combustion reaction. Methods for synthesizing the nanocrystalline metal powders are characterized by forming a combustion synthesis solution by dissolving in water an oxidizer, a fuel, and a base-soluble, ammonium precursor of tungsten, molybdenum, rhenium, or niobium in amounts that yield a soichiometric burn when combusted. The combustion synthesis solution is then heated to a temperature sufficient to substantially remove water and to initiate a self-sustaining combustion reaction. The resulting powder can be subsequently reduced to metal form by heating in a reducing gas environment.

U.S. DEPARTMENT OF ENERGY

Patents & Intellectual Property

» Patent #: US 2011/0194970 A1

Technology Portfolio(s)

» Chemistry

Potential Industry Applications

» Chemicals

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