3D-PRINTING OF ENERGY DEVICES USING PARTICLE-BASED INKS

PI: Ramille N. Shah¹,²,³, Co-PIs: David C. Dunand¹, Scott A. Barnett¹

1. Materials Science and Engineering
2. Surgery: Transplant Division
3. Institute for BioNanotechnology in Medicine
Metallic 3D-Printed Reversible Hydrogen Generator

Particle-Laden Ink Development

Ambient Temp. 3D-Printing

Thermochemical Processing

Characterize & Refine

Ceramic Inks

Ceramic + ΔH = Sintered Ceramic

Controlling Shrinkage

Metal Oxide Inks

Oxide + H2 + ΔH = Sintered Metal

Controlling Shrinkage

Redox Cycling

3D-Printed Iron-Air Battery

Ceramic 3D-Printed Solid Oxide Fuel Cell

ISEN
INSTITUTE FOR SUSTAINABILITY AND ENERGY AT NORTHWESTERN