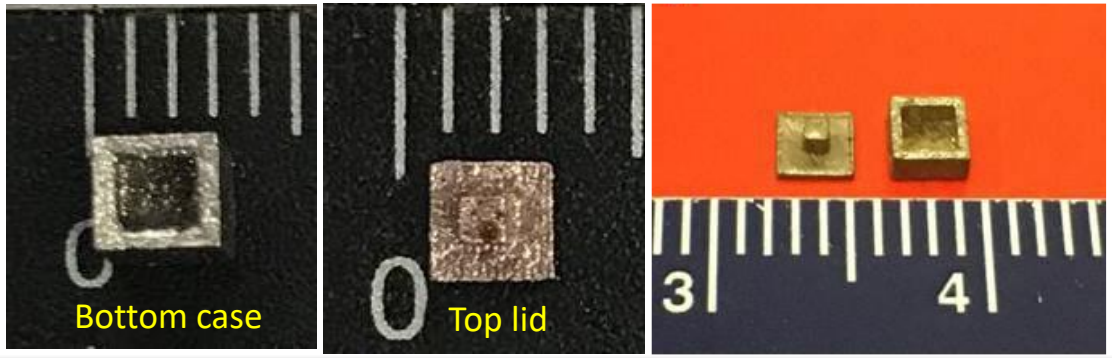
XTempQuanta

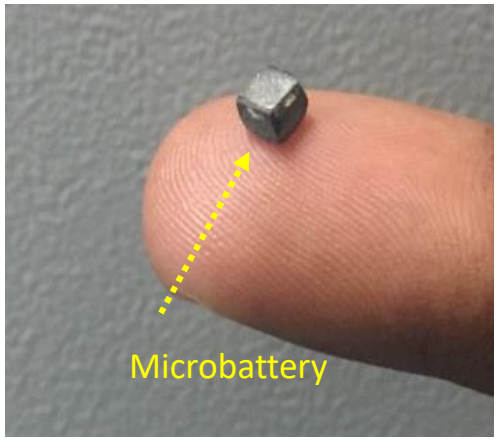
Unleashing the Future : Wide Temperature Micro Batteries

Efficient Process for Extreme-Condition Li-ion Microbattery Fabrication:

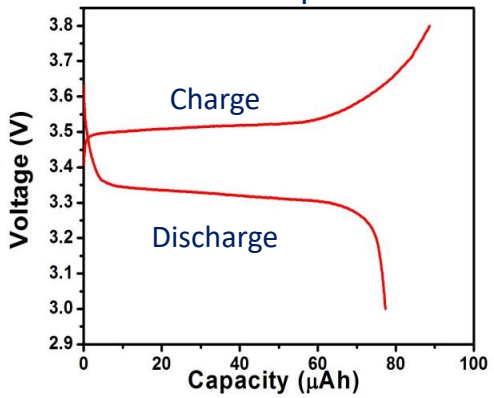
- Flexible design process, eliminating conventional hardware components
- Works in extreme conditions without compromising capacity and power
- Utilizes additive manufacturing techniques for scalable batch fabrication
- Wide range of battery materials for diverse working conditions
- 3D printing enables downsizing and optimization for improved performance

3D Printed Microbattery





Electrochemical performance



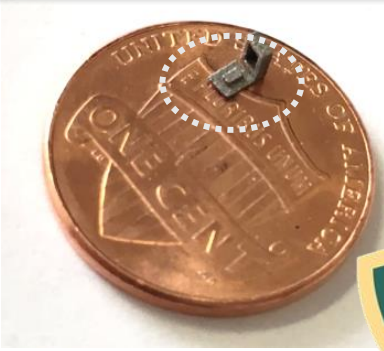
Wide temperature Microbattery for Microelectronics:

- Compact dimensions from 4x4x4 mm to 2x2x2 mm
- Wide temperature range for autonomous microdevices
- Operating from 0 to 125°C, nonflammable battery technology
- Cell voltage of 2 - 3.8 V, Capacity of 30 - 350 µAh
- Operating current of 10µA - 100µA High storage temperature stability up to 450°C
- 5X improvement in capacity compared to state-of-the-art micro batteries
- High-pressure stability up to ~10000 psi

Broader impact:

- Benefits in medical devices, military applications, and IoT
- Improves healthcare, enhances military capabilities, and advances IoT functionality
- Reliable power solutions for healthcare, defense, and technology
- Positive impact on individuals' lives and industry efficiency

Microbattery Design Prize 2023
Prof. Leela Arava
Nicole Traynor
Arava Research Group
Wayne State University



Microbattery on a penny