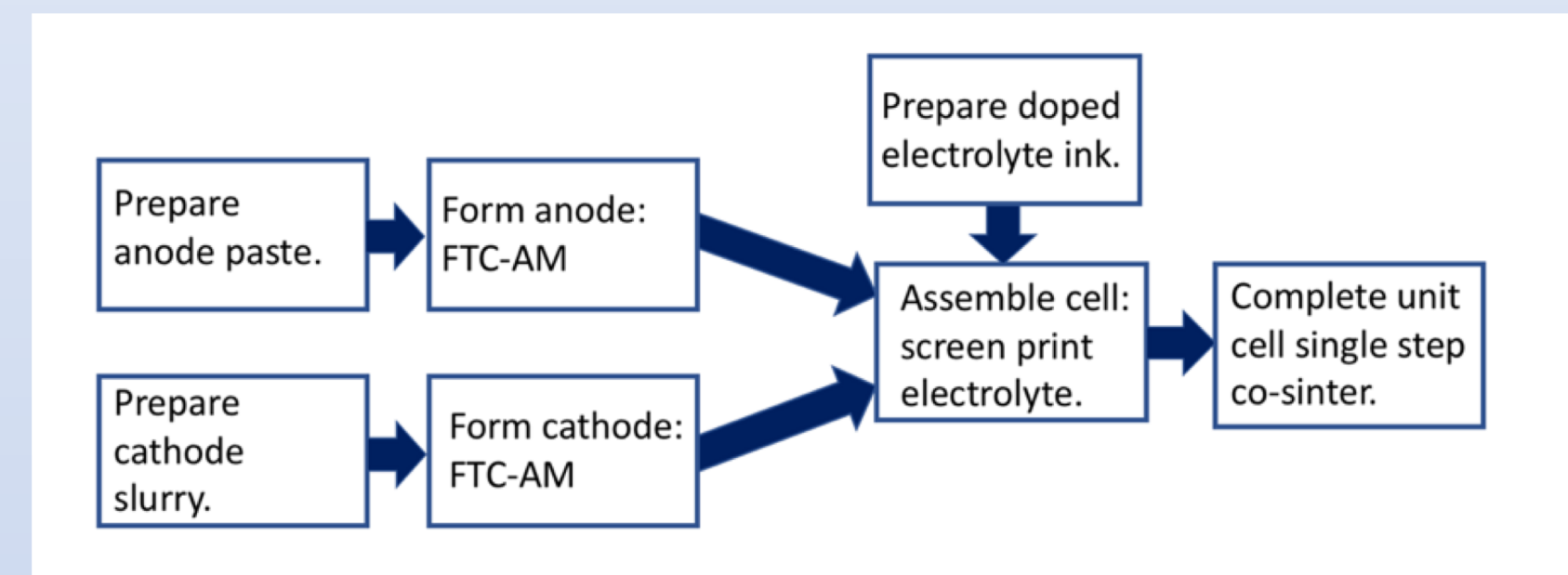


# Hybridization of Freeze Casting with Additive Manufacturing for Simplified Production of High Performance SOFCs - DOE Phase I STTR

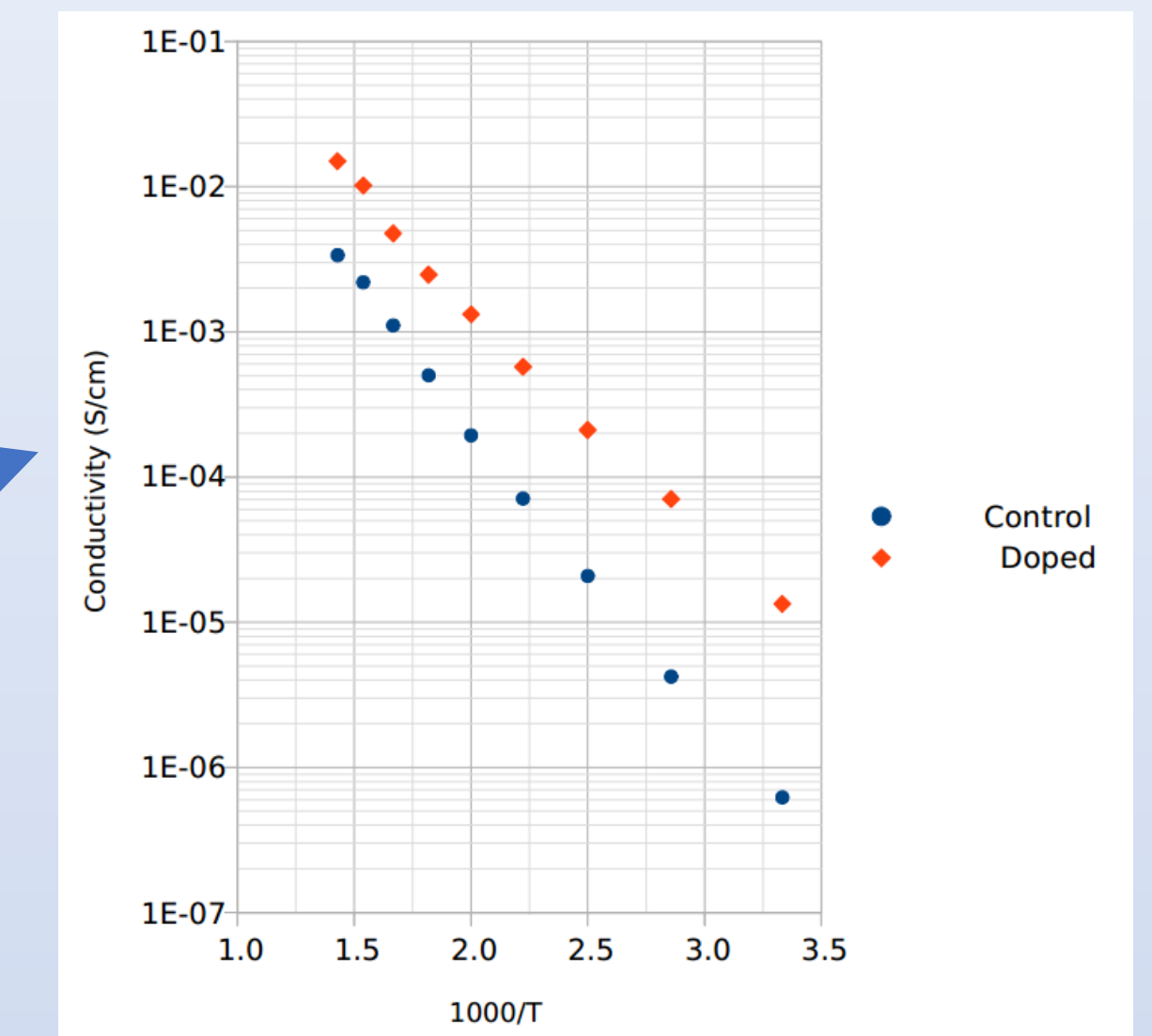
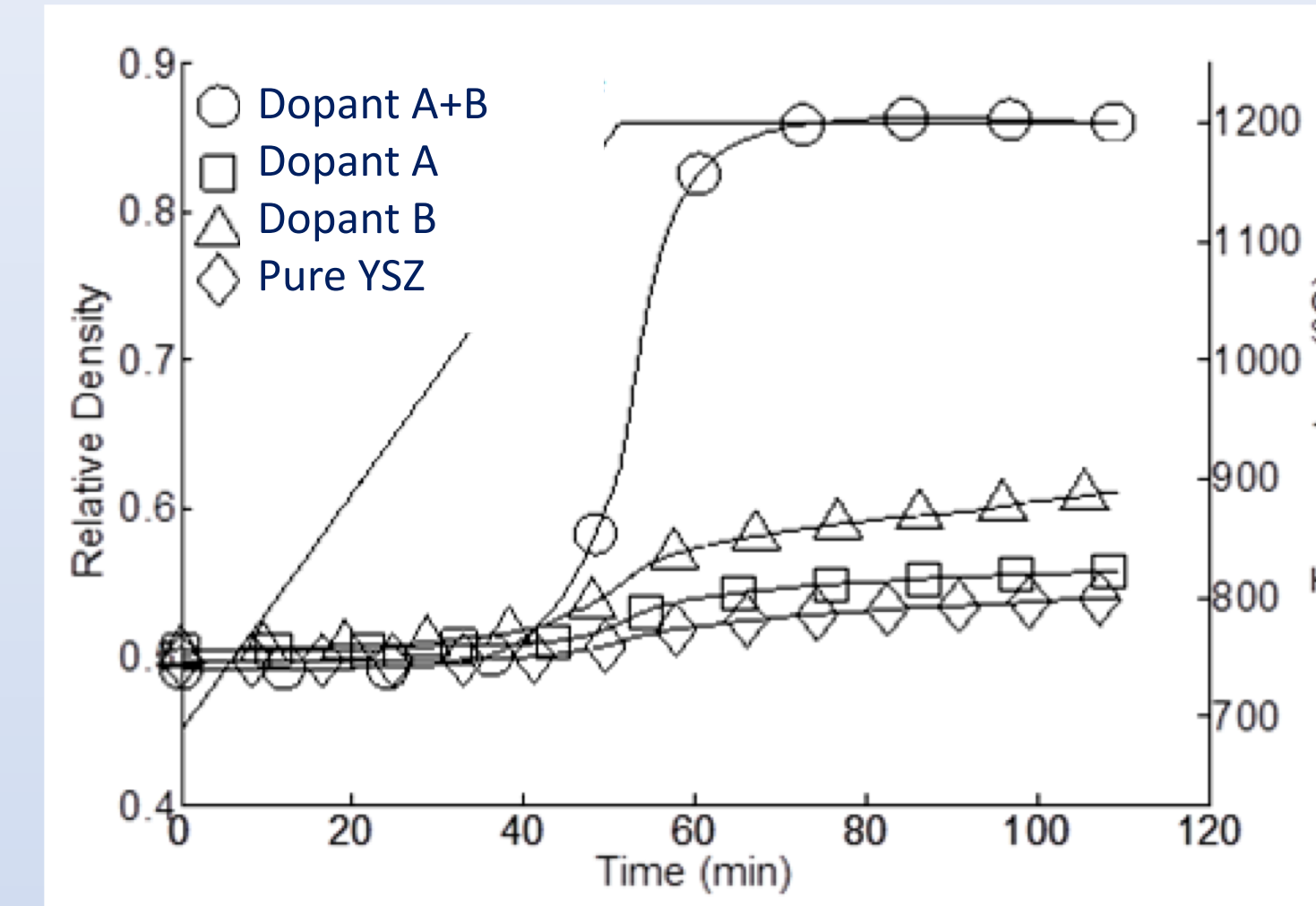
Dr. David Driscoll, Glacigen Materials Inc. – ddriscoll@glacigen.com  
 Prof. Stephen Sofie, Montana State University

## Project Objectives

- Demonstrate hybridization of freeze tape casting with additive manufacturing.
- Print SOFC electrodes with high-performance FTC structure.
- Co-sinter entire SOFC in single, low-temperature step.

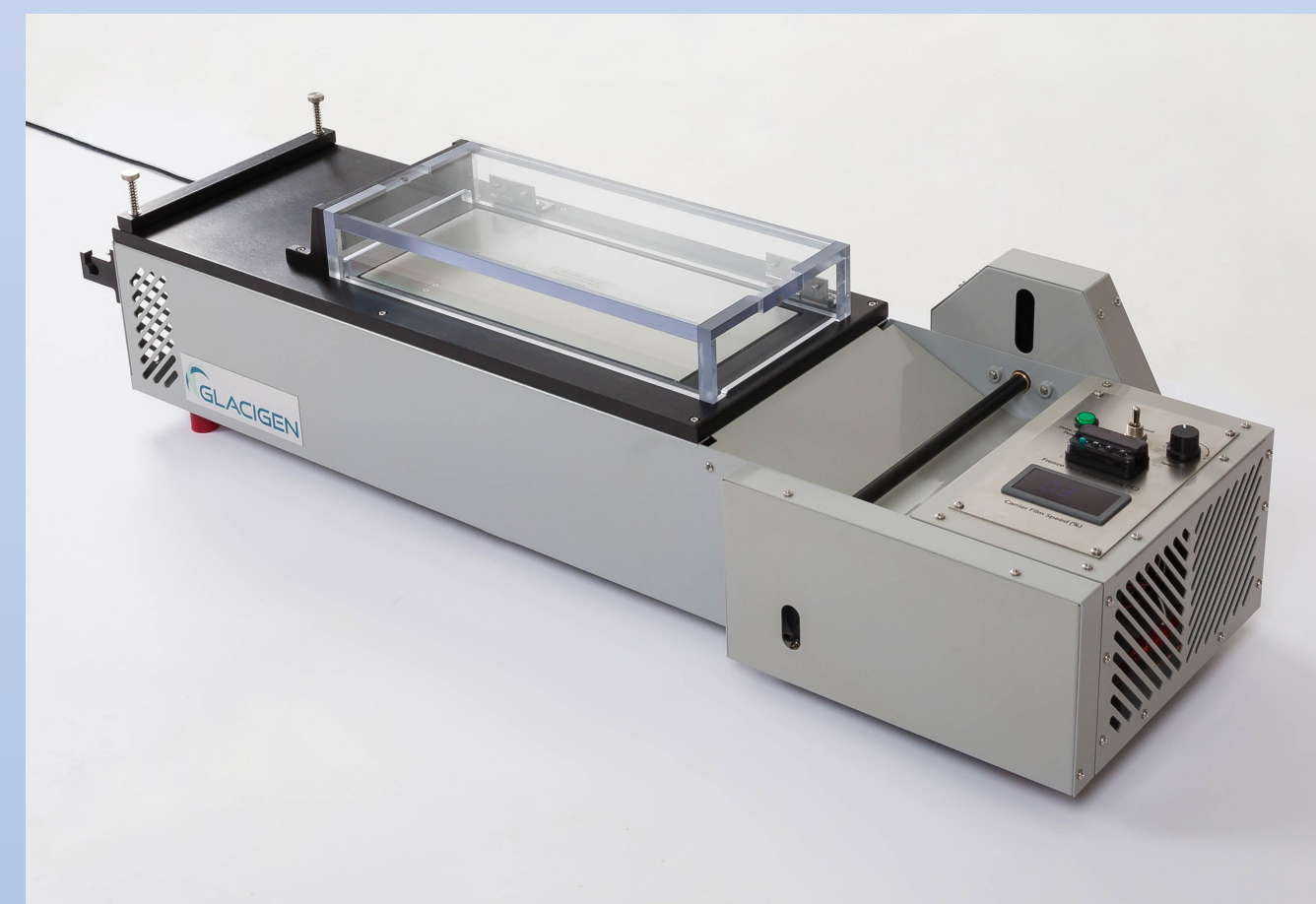


## Key Results

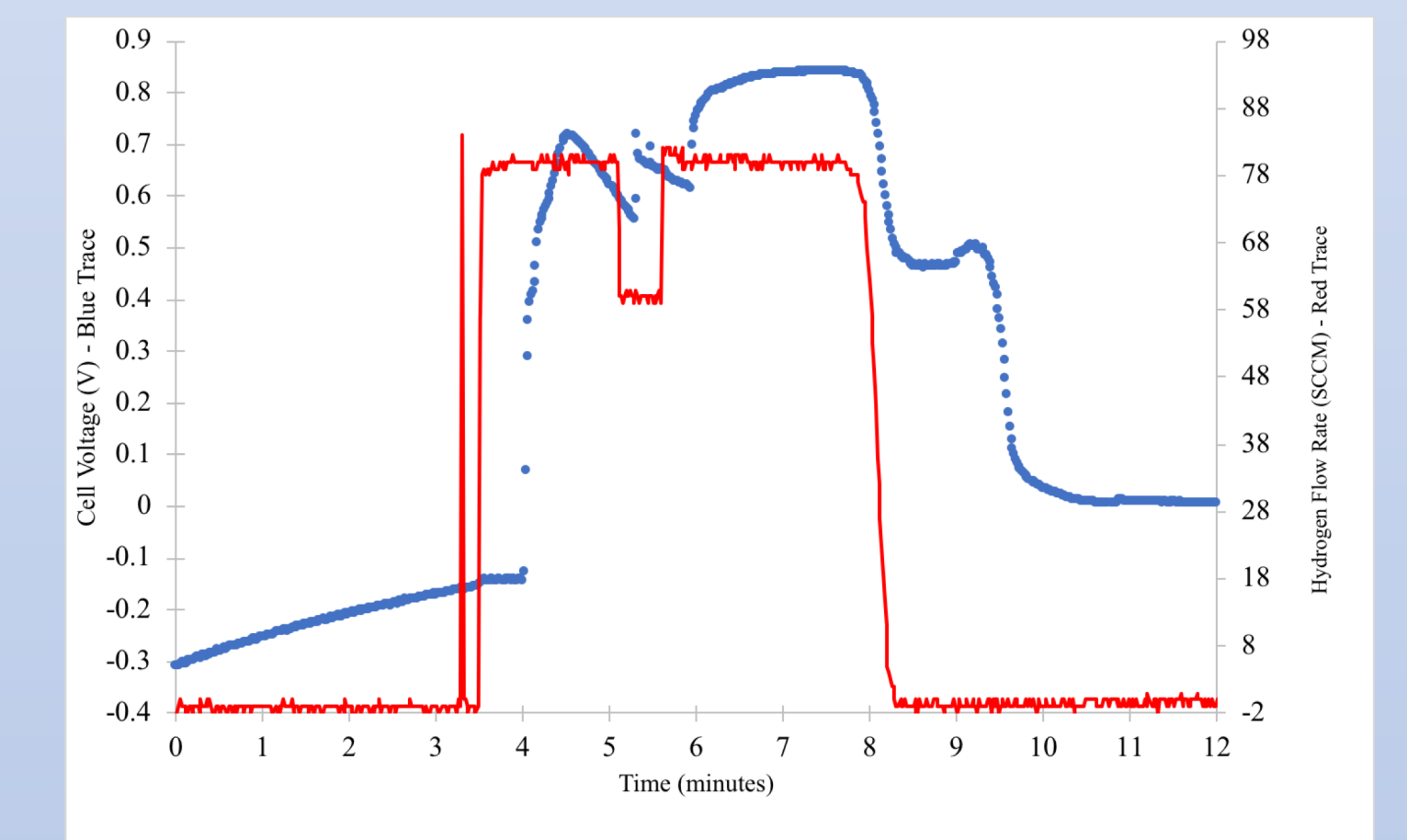
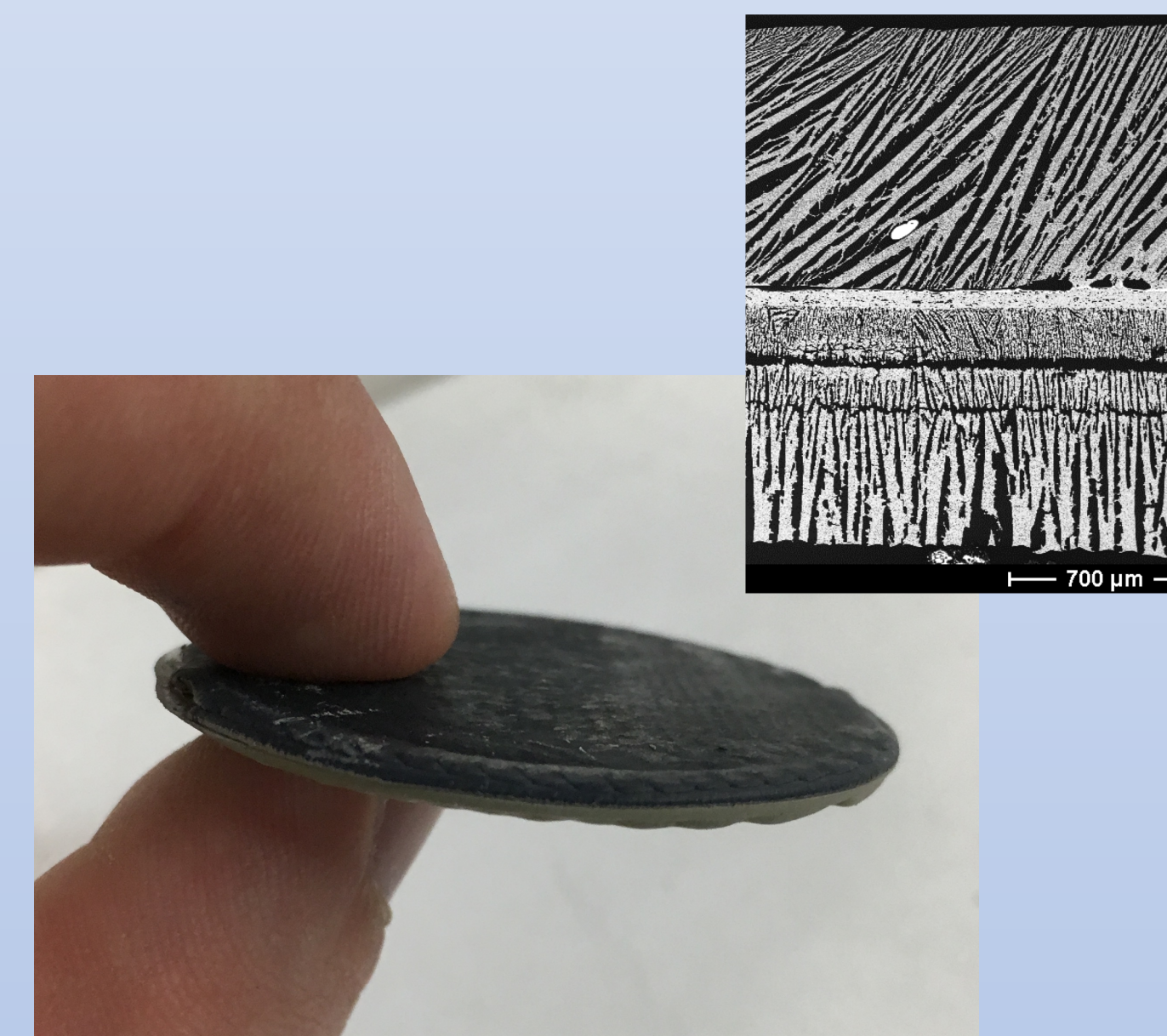
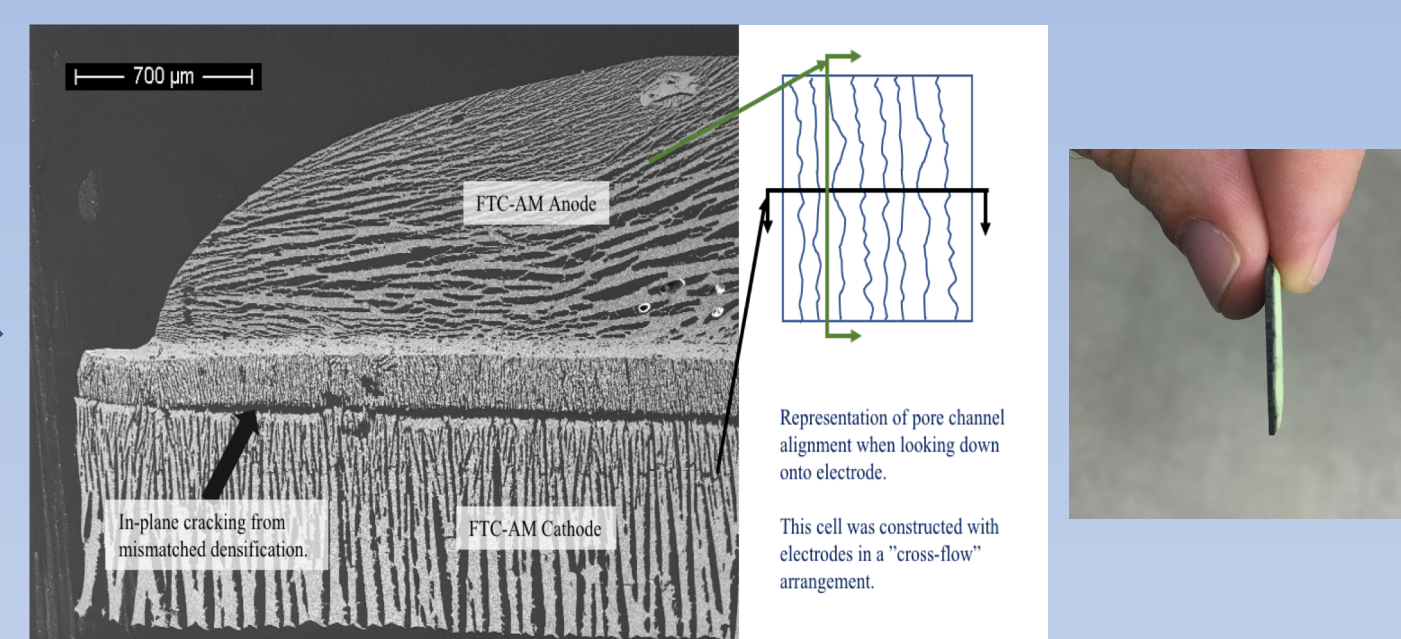
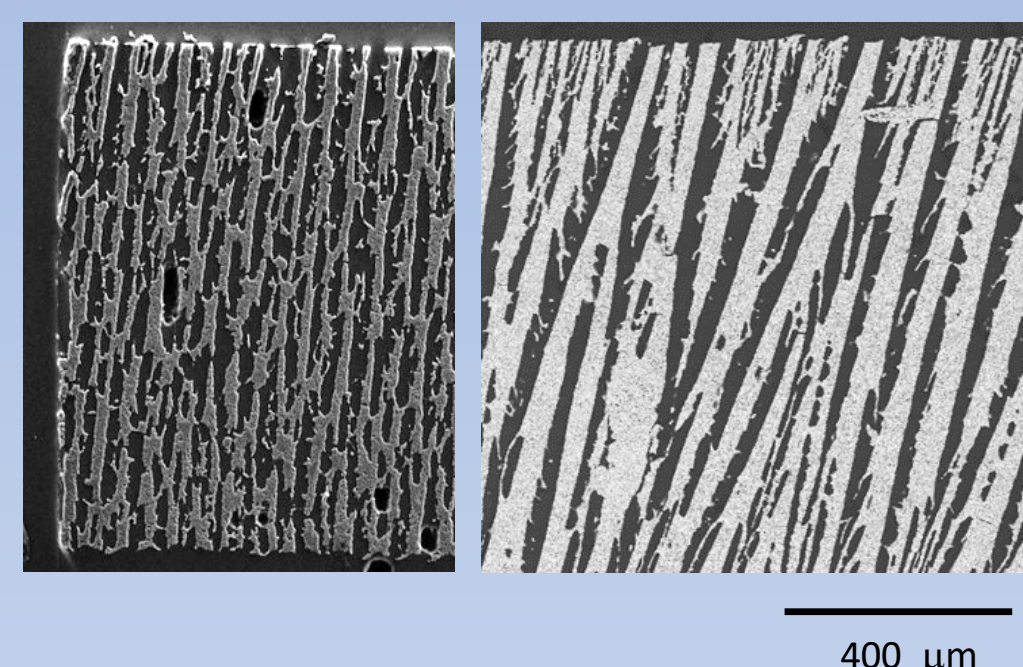
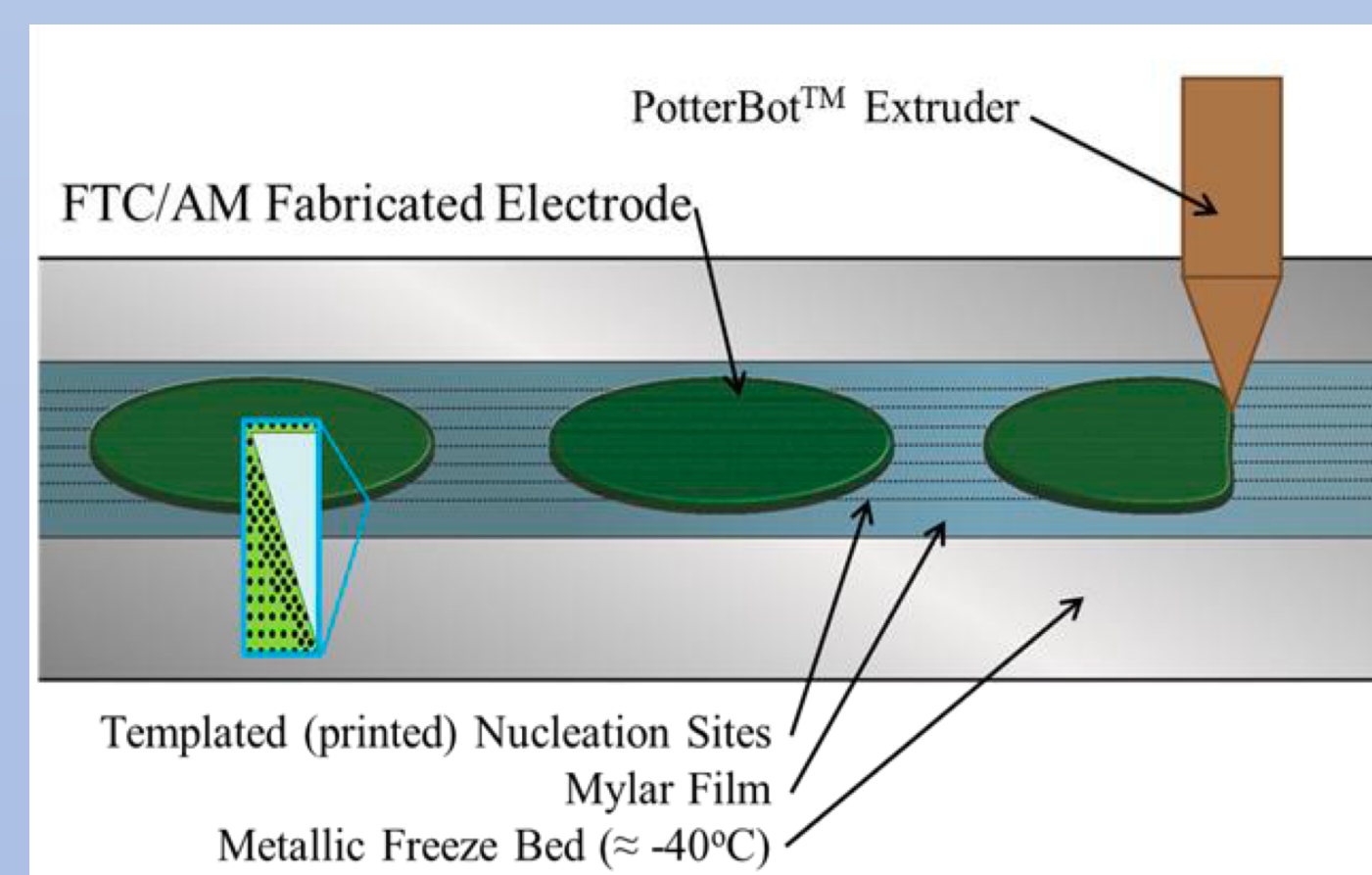
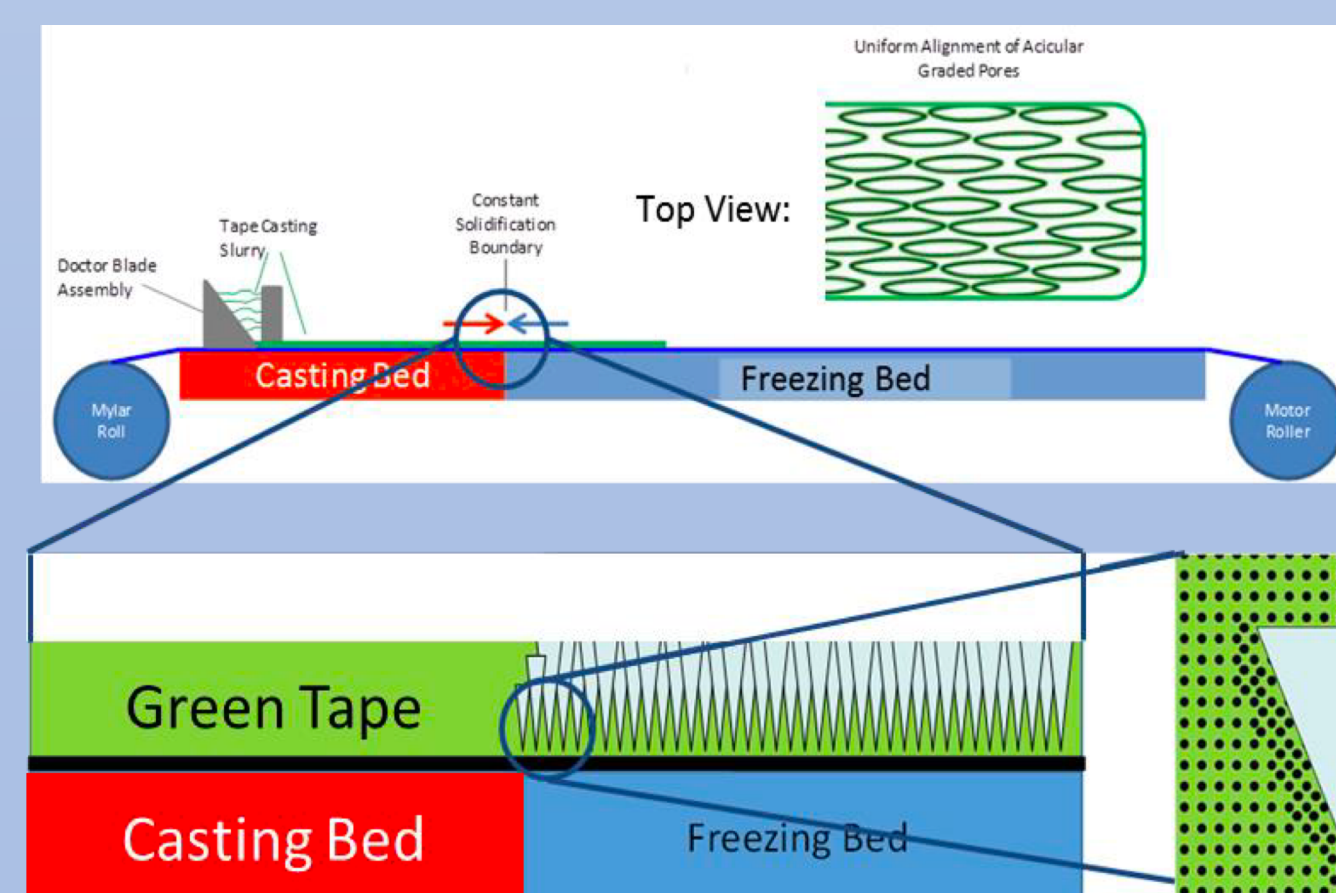
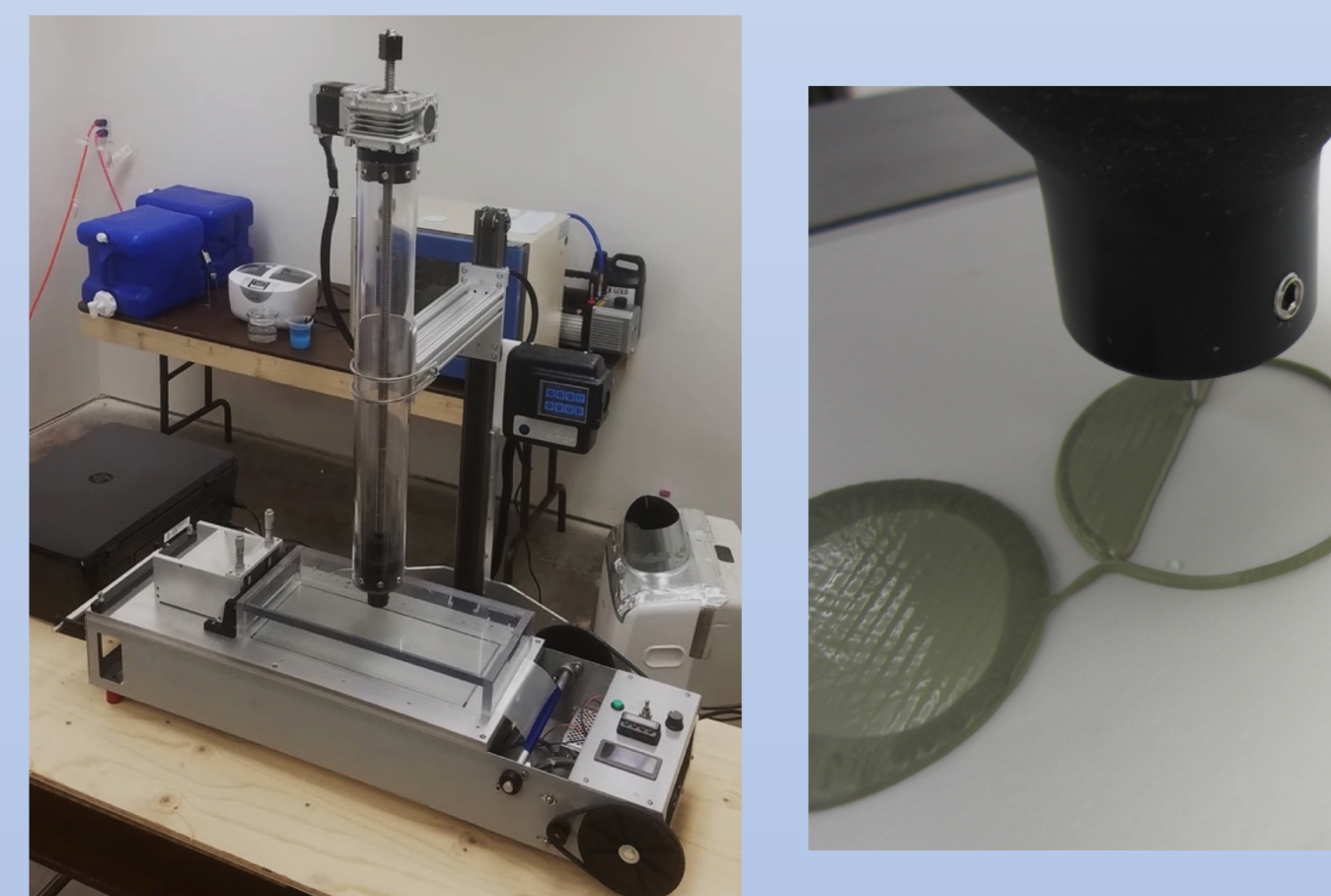


## Approach

What Glacigen Does:



Glacigen Applied to SOFCs:



## Going Forward

- Beyond doping of YSZ to enable low temperature sintering without chemical interaction, match doping schemes in active anode & cathode materials to tailor shrinkage of entire cell
- Print entire cell in single step!
- Advance FTC-AM apparatus.

## Acknowledgement

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