QESST Photovoltaic Pilot Line

James LeBeau

QESST PhD Student

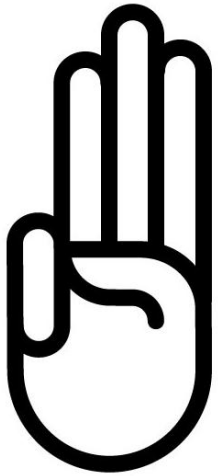
ASU Arizona State University

What I'm going to tell you about

- Brief description of ERC architecture
  - Test Bed I: Student Led Pilot Line
- Pilot line capabilities
  - Tools, processes, characterization
- Brag about student accomplishments
- Future goals

ERC Architecture

- Three Research Thrusts
  - TW manufacturing, Moore's Law PV Devices, Advanced Enablers



- Three Test Beds
  - Student Led Pilot Line
  - Module Integration and Communication
  - Building Integrated Photovoltaics

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Test Bed I

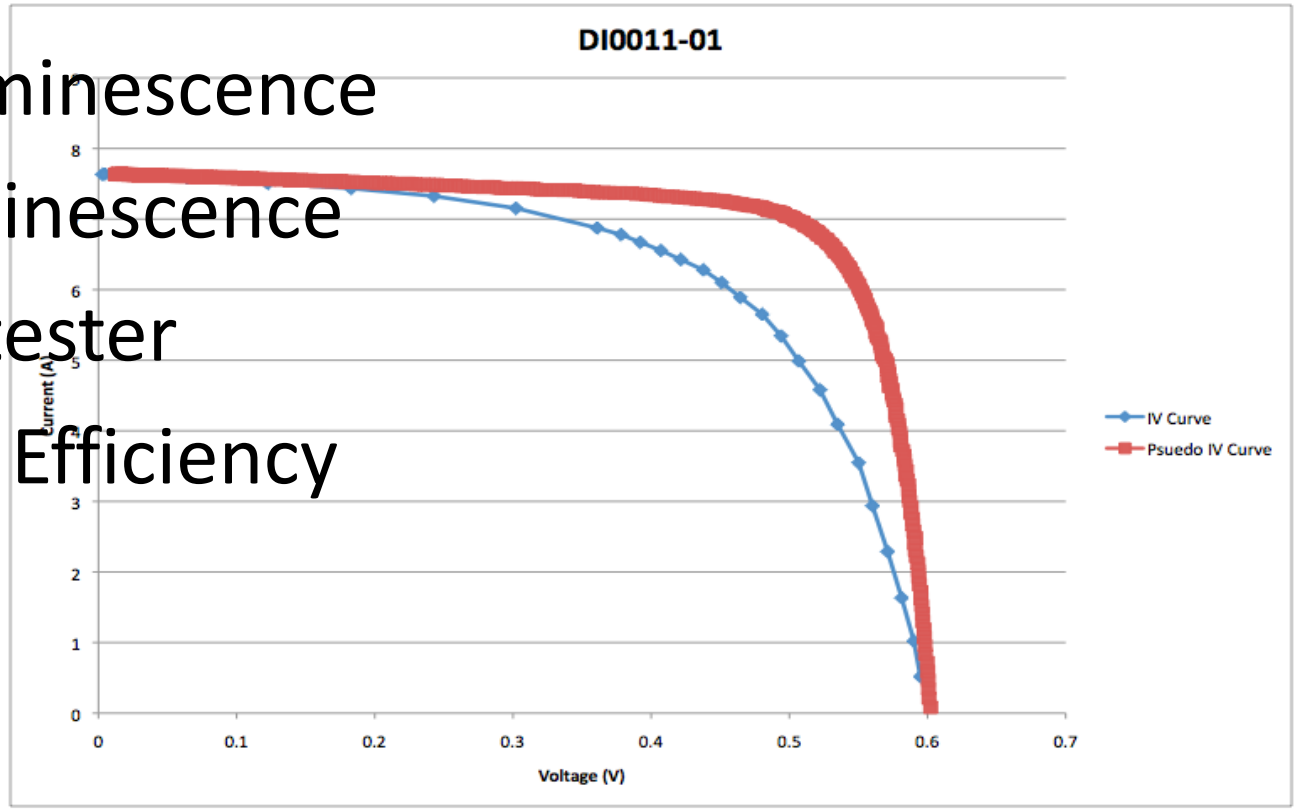
- NSF/DOE Engineering Research Center
  - Education
  - Industry
  - Research
- Photovoltaic pilot line: MTW, Research Park
  - Student Interaction/ Leadership
  - Industry aid/ expertise
  - Professor mentorship

Capabilities/Tools

- Diffusion Furnace (Phosphorus)
- SiN ARC Deposition
  - PECVD
  - Research/testing CVD
- Screen Printing
  - Backside Aluminum
  - Frontside Silver
  - Box Furnace (drying)
- Firing
  - Belt Furnace
  - Rapid Thermal Annealer (RTA)

Characterization

- Four Point Probe
- Electroluminescence
- Photoluminescence
- Flash I-V tester
- Quantum Efficiency



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Student Accomplishments

- Design and implementation of eTraveler
- Construction of Photoluminescence imaging tool
- Optimization of phosphorous diffusion recipe for 156mm substrates
- Successfully fabricated fully functional medium efficiency conventional 156mm solar cells

Goals

- >15% efficient 156mm student built solar cell!
  - Belt furnace optimization
- Inclusion of more students
  - Successful summer REUs
- More industry relationships
  - Wanna help?

The End

Thank you for Listening

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