

P/O/E/T/S

CENTER FOR POWER OPTIMIZATION OF
ELECTRO-THERMAL SYSTEMS

POETS REU information session

**HOWARD UNIVERSITY | STANFORD UNIVERSITY | UNIVERSITY OF ARKANSAS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN** AN NSF SPONSORED CENTER



P/O/E/T/S

POETS is an Engineering Research Center (ERC)

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Microelectronics, Sensing and Information Technology



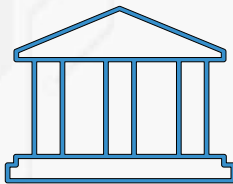
Advanced Manufacturing - Nanotechnology

Engineering Research Centers (ERC)

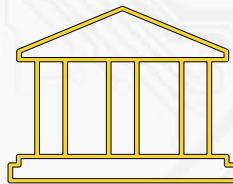


The aim of the POETS ERC is to improve the electric power density available in tightly constrained mobile environments by integrating novel 3-D cooling circuitry, power converters, and algorithms for smart power management.

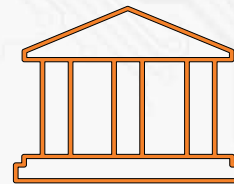
POETS Institutions



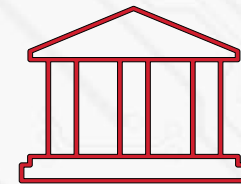
Illinois



Howard



Stanford



Arkansas



POETS long term goal is to increase power density of current mobile, electrified systems

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Technology focus:



Mobility → POWER DENSITY

Problem:

Power density limits exist because of the fundamental mismatch between the ability of a system to generate heat in a local electronics, and its capacity to dissipate that heat in a given volume.

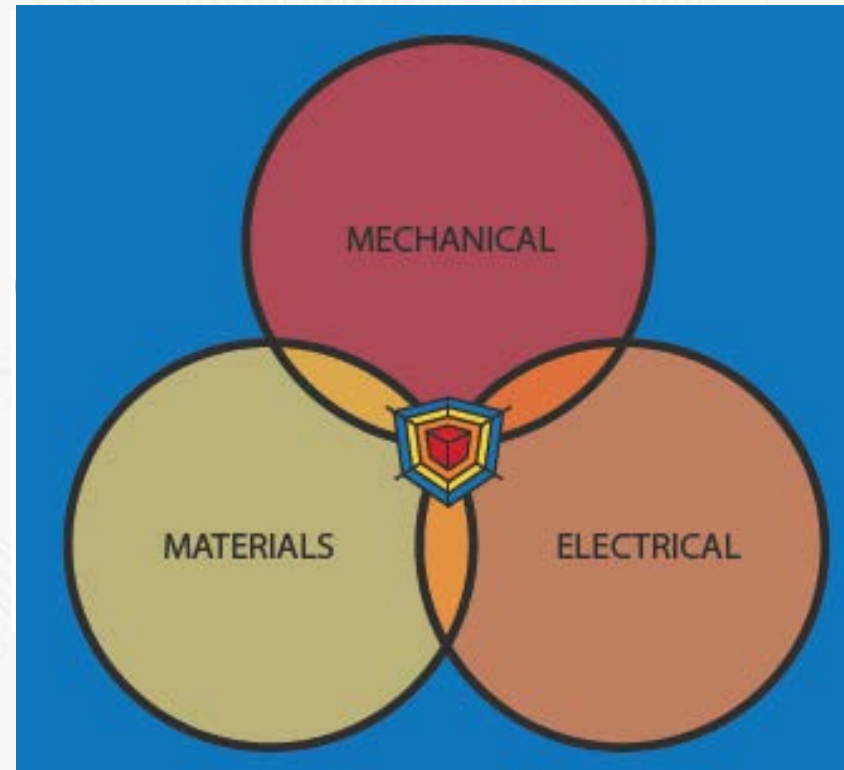
Current electrical systems are thermally limited in power density



- Each field approaches the problem from their own perspective and misses the whole
- Lack of a systems-level approach to power management



- **POETS brings the systems approach**





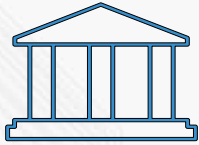
POETS

POETS has infrastructure to accomplish

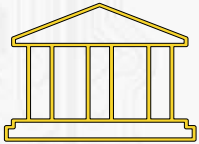
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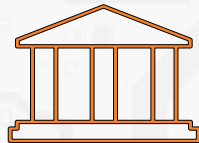
POETS Institutions



Illinois



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Stanford



Arkansas

Faculty, facilities, researchers, students

Industry/Government Partners



OECO

Air Force Research Laboratory



TOYOTA



NORTHROP GRUMMAN

CATERPILLAR®



UTC Aerospace Systems



Rolls-Royce®

CUAerospace



JOHN DEERE

Education & Outreach Efforts

Training and recruiting the best students to address today's most pressing challenges



POETS REU Program: Summary

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- 10-week summer program with placement at one of four POETS institutions
- \$5000 stipend
- Room and board paid
- Airfare and traveling costs covered
- \$500 conference allowance after summer program to present REU research
- Travel to POETS annual meeting to present research and meet all POETS members (faculty, staff, students and industry partners)

Center wide activities:

- Bi-weekly research webinar on POETS research
- Bi-weekly career development series



Home institution activities:

- Additional professional development workshops
- Social activities within POETS, among other REU program and within dorms
- Research presentations

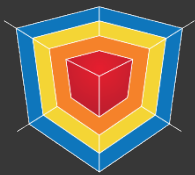


POETS REU Program: Application process

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- Application
 - Statement of Purpose
 - Unofficial transcript, GPA 3.0/4.0
 - At least one recommendation letter
- Online application goes live December 2017
- Application due March 1st, 2017. Accepting on a rolling basis.



P O E T S

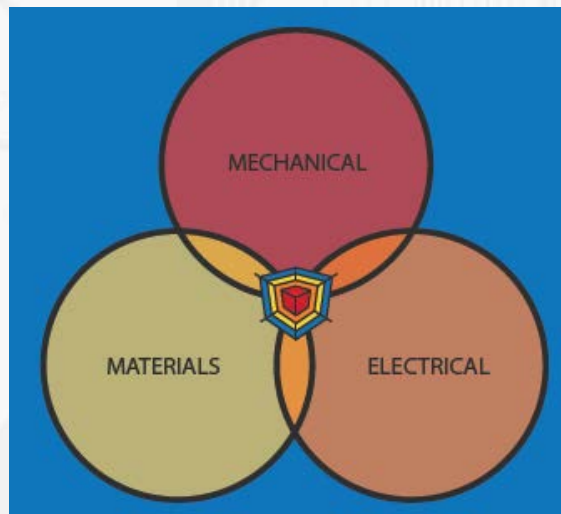
Questions

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Engineering Research Center for Power Optimization for Electro-Thermal Systems (POETS)

Enabling electrified mobility in air, highway, and off-road vehicles through dramatically increased power density



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Learn more:

POETS-ERC.ORG/REU