This NSF REU Site, funded by the Division of Engineering Education and Centers, focuses on providing cutting-edge research in the areas of energy generation (solar, biomass, piezoelectric, generation from salinity gradients, etc.), energy storage/conversion (lithium-ion and lithium-air batteries and formic acid fuel cells) and power grid integration (solar and electric vehicle to grid integration).

**PROJECT OBJECTIVES**

- Opportunities to conduct high-quality immersive research in the areas of energy generation, storage and power transmission.
- Train top national research talent in key emerging areas of energy, critical for maintaining national preeminence.
- Nurture student professional growth and train them on intelligent research approaches including: maintaining a daily diary, interpreting data and information, effective research outcomes dissemination and ethical decision making.
- Encourage students in energy-related careers to pursue graduate studies through targeted field trips to Oak Ridge National Laboratory (ORNL) and industrial partner sites.
- Preparation of research papers and posters.
- Saturday afternoon outreach session.

**Eligibility**

- U.S. citizen or permanent resident.
- Electrical engineering, chemical engineering, mechanical engineering, physics, chemistry, mathematics and other related disciplines.
- Sophomores, juniors and seniors from 2-year or 4-year institutions.
- Must graduate after September 2020.

**Application Process**

- Transcripts.
- Application form.
- Two reference letters (at least one from a discipline-specific faculty).
- Personal statement on interest in energy-related topics and future goals.
- Resume (two pages).
- See website for more details.

**Award Information**

- $5,000 stipend for 10 weeks.
- On-campus housing included.
- Round-trip travel expenses up to $500.
- Research supplies up to $400.

**Activities**

- Energy-related, cutting-edge, immersive research and training.
- Intelligent research and professional development seminars and workshops.
- Field trips to Oak Ridge National Laboratory (ORNL) and industrial partner sites.
- Preparation of research papers and posters.
- Saturday afternoon outreach session.

**Topic Areas**

- Solar photovoltaics, optical and electrical modeling.
- Biomass pyrolysis, renewable and alternative energy resources.
- Selectively gas-pervious anode flow field for direct formic acid fuel cells.
- High-energy-density lithium-ion batteries.
- Energy harvesting with embedded piezoelectric transducers in additive manufacturing.
- Minimal-energy computational models.
- High-efficiency wireless power transfer.
- Modeling the energy absorption behavior of mechanical metamaterials with viscous component in their base materials.

**Award Information**

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- Food allowance.
- Round-trip travel expenses up to $500.
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**Get Application:** [https://www.tntech.edu/engineering/research/cesr/reu-irest/index.php](https://www.tntech.edu/engineering/research/cesr/reu-irest/index.php)

All qualified applicants are encouraged to apply, including minorities, women, veterans and individuals with disabilities.