Solar flow batteries
UTA (15-52 and 15-33)

Technology Need:
Solar power offers an inexhaustible energy source, but large-scale storage of solar energy has not been commercialized due to high capital cost and difficulty of scale-up. In addition, complexity of solar energy infrastructure poses a hurdle to new adopters. Hence, it is necessary to improve the efficiency of the conversion process and the storage of energy, while reducing the cost of the complete system.

Solution/Offering:
UTA researchers have designed novel energy storage devices that are predicted to cut the cost of a grid-level solar energy device in half. This transformation in cost results from an increase of photo charging current density by at least 5X by using a specific redox species. The technology not only integrates the conversion and the storage, but also significantly increases the efficiency and the rate of conversion, storage and discharge.

Value Proposition:
- Improved solar energy storage and grid stability
- Lowered capital cost
- Minimal safety issues
- High round trip columbic efficiency
- Faster response time of energy harvester storage combo

Industrial application:
- Solar energy storage companies
- Solar powered vehicles

Patent Status:
- Provisional

Current Stage:
- Prototyped and tested

Publications:
Efficient Solar Energy Storage using a TiO2/WO3 Tandem Photo electrode

Meet the Inventor
Dr. Liu's research is focusing on nanomaterial synthesis, polymer electrolyte membrane (PEM) fuel cells, lithium-ion battery materials, material degradation in electrochemical system, transport phenomena in fuel cells and batteries, material and process computational simulation, and energy generation and storage

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