

**Master's Thesis Defense Announcement**  
**Mechanical and Aerospace Engineering Department**  
**University of Texas at Arlington**

**Electrophoretic Deposition for Novel Nano-decorated electrodes towards  
Thermally Self-Charging Supercapacitors**

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**Abstract**

Thermally Self-Charging Supercapacitors (TSCS) are a promising new technology that can harvest waste heat to produce electrical energy. The Soret effect is exploited wherein ion separation due to a temperature gradient leads to a potential difference. Here, we use electrophoretic deposition (EPD), a room-temperature, scalable, universal technique, to obtain CNT decorated electrodes for fabrication of such TSCS devices with ionic liquid electrolyte. We further show that precise control over deposition parameters can be used for optimization of TSCS performance metrics. TSCS devices were tested by several characterization standards, indicating the superior performance of nanodecorated electrodes obtained by EPD.