

Abstract Submitted  
for the TSF21 Meeting of  
The American Physical Society

**Fabrication and Characterization of Simple Dye Sensitized Solar Cell Devices**<sup>1</sup> KAINÉ BUCHANAN, TONI SAUNCY, Texas Lutheran University — This work explores an alternative materials system than that used for commercialized solar cells. Current solar cell technology is dominated by the ubiquitous silicon-based microelectronics industry, which utilizes toxic and sometimes hard to obtain materials. In the past decade, researchers have discovered an organic-based materials system that can rival the photovoltaic properties of the silicon-based devices. For this project, these dye-sensitized solar cells (DSSC) were investigated, with the dye extracted from beets, raspberries, and blackberries. Layered solar cells that utilize other nontoxic materials (titanium dioxide, graphite, and iodide) were fabricated and characterized by comparing measured voltage in dark (built in bias) and under constant illumination conditions. Most fabricated devices produced measurable voltage above the built-in bias, in the range of 10mV - 120mV, which is similar to reported results from other groups. Further characterization to determine overall efficiency of energy conversion is planned.

<sup>1</sup>This work supported by NSF IUSE:HSI Grant 1953561

Toni Sauncy  
Texas Lutheran University

Date submitted: 24 Sep 2021

Electronic form version 1.4