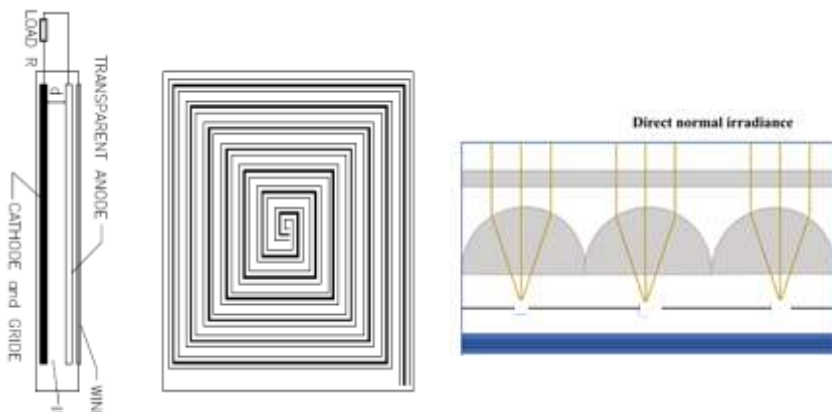


3D-Printed Photoelectric and Thermal Solar Module

Anatoly Blanovsky / Westside Environmental Technology

Project Summary

flat plate solar collector (FPSC), concentrating solar power (CSP) systems with thermal energy storage (TES) and 3D-printed thermal field emission (TFE) converters could dramatically lower the cost and energy payback time of the CSP technologies. The TFE converters with a transparent anode, in which carbon nano-tube (CNT) ink printed on a dielectric substrate as a cathode is surrounded on both sides by a gate made of Ag or Ag-O-Cs micro-particle ink, can thermally insulate TES. An additional TFE design with a thin anode containing a large number of cooling micro-channels can serve as the CSP receiver. CO₂ gas from the TFE anode at the temperatures of 650° C heats sCO₂ Brayton and then steam Rankine cycles.



Key Personnel/Organizations

Talos Industry Corp

Brayton Energy LLC testing facilities

California State University Los Angeles

Budget and Timeline

N/A

Key Milestones & Deliverables

- | | |
|----|---------------------------|
| 1: | TFE/FPSC moduler design |
| 2: | TFE/Cavity moduler design |

Project Impact

As Lorentz was ahead of his time by suggesting before quantum mechanics that some disturbances, like waves, travel with particles through a vacuum without moving it, field theory based on traditional space-time description will play a major role in the COMSOL modeling of the photon or nuclear radiation-enhanced TFE converters.