Case Study
Research and Development in Thermal Electric Generators

CUSTOMER: U.S. Department of Energy (DoE)
CONTRACT #: DE-FG02-07ER86296
PROJECT NAME: STTR Phase I and Phase II, "High-efficiency, Cost-effective Thermoelectric Materials/Devices for Industrial Process Refrigeration and Waste Heat Recovery"
PROJECT DURATION: 2007-2008

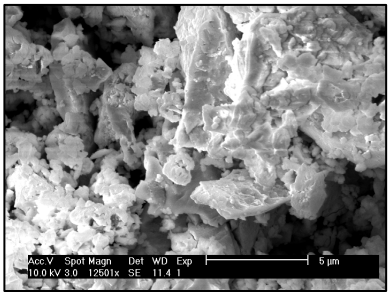
OVERVIEW

The US Department of Energy solicited a SBIR/STTR request for proposal (RFP) for the development of new thermoelectric materials for the use in thermoelectric generators for waste heat recovery applications. Thermoelectric generators (TEG) convert wasted heat into electricity. Traditionally, TEG systems have low efficiency in converting heat to electricity (*i.e.* low ZT values). Using nanotechnology, Aegis Technology has developed high ZT capable, nanostructured thermoelectric materials. These high ZT capable thermoelectric materials can be used for high efficiency TEG systems. Aegis Technology was awarded the project in 2007 and successfully completed the project in 2008.

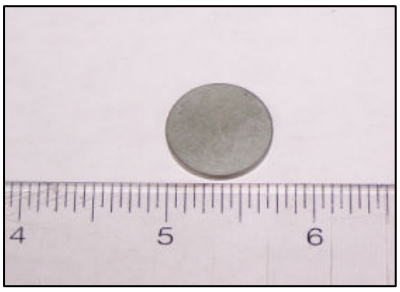
DELIVERABLES

Aegis Technology delivered nanocomposite materials. In the process, Aegis Technology conducted and/or developed:

- Processing
- Scanning Electron Microscope (SEM), Energy Dispersive X-Ray Spectroscopy (EDS), and X-Ray Diffraction (XRD) Analysis
- Characterization
- Thermo-power Measurements
- System Level Design



(a)



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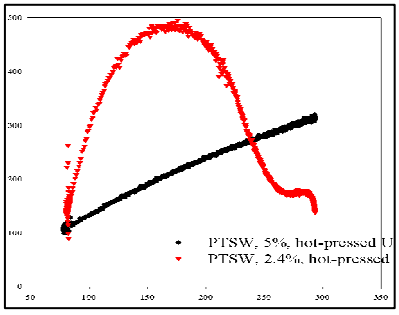

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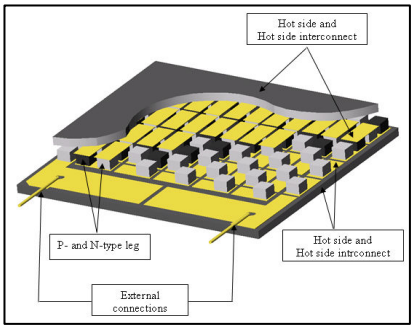

(d)

(a) PbTe & PbSe Cryomilled TE Nanomaterials, (b) Consolidated PbTe & PbSe Sample, (c) Thermo-power measurement, (d) TE Module System Level Design

CONTACT

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