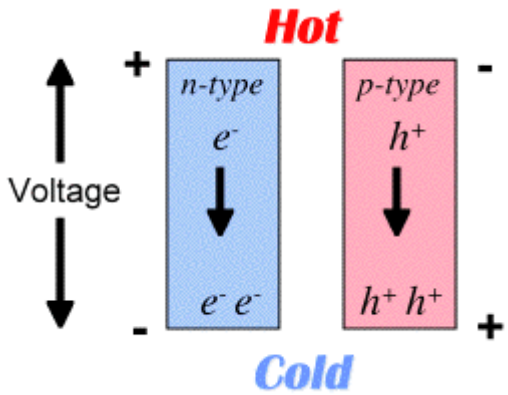
Master thesis: Development of an automated Seebeck setup

The new High-Throughput Engineering (HTE) group at ZAE Bayern and iMEET/WW6 of FAU Erlangen-Nürnberg develops high-throughput methods to accelerate research and development of semiconductors, energy materials and smart materials. Lighting, Displays, Electronics, Sensors, Detectors, Batteries, Capacitors and Thermoelectrics are application fields for these materials.



[http://thermoelectrics.matsci.northwestern.edu/thermoelectrics/index.html, Fa. Stäubli]

In this work, an automated setup to measure the Seebeck coefficient shall be developed and built. The Seebeck coefficient is defined as $V = \alpha * \Delta T$ with V = Voltage, α = Seebeck coefficient and ΔT = Temperature difference. In a thermoelectric material, the charge carriers transport both charge and heat. With applied temperature gradient, the charge carriers diffuse from the hot to the cold side. This leads eventually to a voltage between both sides ("Seebeck effect").

Benefits:

-Topic that gives room for creativity and new ideas

-Work in a motivated group and pleasant working environment

Qualification:

-Student of Physics, Electrical Engineering, Material Science, or comparable

-Profound technical knowledge

-Experience in a CAD program and/or a programming language is beneficial

The thesis can be written in German or English.

Contact: Dr. Tobias Stubhan, tobias.stubhan@zae-bayern.de