Thin Film Technology for Waste Heat Recovery

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Overview

The shortage of energy resources is the main problem of recent times. More than half of the energy consumed worldwide is wasted as heat. The recovery of small fraction of this waste heat can change the global energy scenario. Thus thermoelectricity has become significant in the field of waste heat recovery. It is also advantageous for localized cooling of microelectronic systems for its ability to maintain its efficiency in small scale dimension. However, the major problem associated with thermoelectricity is the low efficiency of commercially available materials. Recent progress in thermoelectric research has enabled researchers to develop new materials with enhanced thermoelectric efficiency.

This course is organized in two modules that should be taken together. The topics in Module A will be based on thin film technology where the topics such as general aspects and history of vacuum science and technology, basic concepts, physico-chemical phenomena in vacuum, physics and principle of pumping, measurements, and thin film deposition for thermoelectric materials will be covered. Module B will deal with the thermoelectric effect and will cover its introduction, different materials with particular emphasis on nanostructure systems and characterizations.

Course participants will learn these topics through lectures and interaction.

Modules	**A: Thin Film Technology : December 5 - December 8, 2015** **B: Thermoelectric Effect : December 9 - December 14, 2015** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ you are an engineer or research scientist interested in developing modules for waste heat recovery using the principle of thermoelectric effect. ▪ you are a material scientist interested to know about the various aspects materials and their structures including thin film materials for the application of waste heat recovery. ▪ you are a student or faculty from academic institution interested in learning techniques of waste heat recovery by using thermoelectric effects, the materials used and their characterizations.
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $400** **Industry/ Research Organizations: Rs. 15000** **Academic Institutions: Rs. 5000** The above fee include all instructional materials, computer use for tutorials and assignments, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. Per Eklund is in the faculty of Linköping University, Sweden. His research interests include novel thin-film materials for energy applications, nitride-based nanostructured thin films for thermoelectrics and epitaxial and nanostructured thermoelectric thin films.

Prof. Pallab Banerji is a Professor of Indian Institute of Technology, Kharagpur. His research interest is thermoelectric and photovoltaic effects in materials, and metalorganic chemical vapour deposition of III-V semiconductors.

Course Co-ordinator

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