

# Giornate sulla Termoelettricità – Pisa, 2022

## Programma della Conferenza

Mercoledì 16 febbraio 2022

- 10:00** Registrazione dei partecipanti  
**10:30** Benvenuto istituzionale e introduzione del presidente dell'AIT

### *Invited lecture*

- 10:50** Simone Fabiano - Linköping University, Sweden  
*Unconventional thermoelectric materials for energy harvesting and sensing application*

### *Sessione 1: Thermoelectric generators and devices (I)*

**Chair: Simone Fabiano**

- 11:50** Elisabetta Di Maggio - Università di Pisa  
*Thermoelectric devices based on nanostructured silicon, the ideal material for thermoelectric applications*
- 12:10** Federico Giulio - Università degli Studi di Milano-Bicocca  
*Exceptional thermoelectric power factor in hyperdoped, fully dehydrogenated nanocrystalline silicon thin film*
- 12:30** Valeria Demontis - Scuola Normale Superiore di Pisa  
*Twinning superlattices induce one order of magnitude reduction of thermal conductivity in InAsSb nanowires*
- 12:50** Giovanni Pennelli - Università di Pisa  
*Electrical and thermal optimization of energy-conversion systems based on thermoelectric generators*

**13:10 - 14:30** Pranzo

### *Sessione 2: Thermoelectric materials: design and characterization*

**Chair: Valeria Demontis**

- 14:30** Cristina Artini - Università di Genova/CNR ICMATE  
*Effects of deposition and annealing temperature on the electrical properties of skutterudite  $Sm_y(Fe_xNi_{1-x})_4Sb_{12}$  thin films*
- 14:50** Stefano Boldrini - CNR ICMATE  
*Ultrafast sintering of  $Mg_2Si$*

- 15:10** Francesca di Benedetto - ENEA, Brindisi Research Centre  
*Comparative study on the thermoelectric properties of p-type CuI thin films*
- 15:30** Alessandro di Falco - Università di Torino  
*Half-metallicity, itinerant magnetism and electronic properties of  $\text{Co}_2\text{ZrSn}$  and  $\text{Co}_2\text{HfSn}$  Heusler alloys: an experimental and ab-initio combined study*
- 15:50** Antonella Rizzo - ENEA, Brindisi Research Centre  
*Al:ZnO-based thin films: a thermoelectric material for room temperature applications*
- 16:10 - 16:25** Coffee break

### *Sessione 3: Thermoelectrics in enterprise applications*

*Chair: Valeria Demontis*

- 16:25** Bruno Lorenzi - GemaTEG Italia Srl, Perugia  
*Cogeneration by a plug-in thermoelectric device integrated within a conventional solar-thermal system*
- 16:45** Fabio Puglia - ISC\_Oversonic srl  
*Application of thermoelectric teqs to functional safety systems of anthropomorphic robots*
- 17:05** Assemblea dei soci dell'AIT
- 20:00** Cena Sociale

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### *Sessione 4: Computational approaches to materials design and investigation*

*Chair: Francesco Rossella*

- 10:00** Dario Narducci - Università degli Studi di Milano-Bicocca  
*Strange Thermoelectrics*
- 10:20** Eleonora Ascrizzi - Università di Torino  
*Ab initio study of bulk and defective  $\text{ZrNiSn}$  half-Heusler alloys*
- 10:40** Alberto Castellero - Università di Torino  
*Role of defects and secondary phases on the electronic structure and transport properties of thermoelectric  $\text{TiNi}_{1-x}\text{Sn}$  half-Heusler*
- 11:00** Paolo Sebastiano Floris - Institut de Ciència de Materials de Barcelona, Spain  
*Impact of doping on the thermal conductivity of PEDOT and PEDOT:PSS through Molecular Dynamics simulations*

- 11:20** Patrizio Graziosi - CNR ISMN  
*ElecTra: A Boltzmann Electronic Transport simulator for complex bandstructure thermoelectric materials*
- 11:40** Binayak Mukherjee - Università di Trento  
*Topological Anderson Insulator in Cation-Disordered  $Cu_2ZnSnS_4$*
- 12:00 - 14:00** Foto di gruppo nella scalinata del Palazzo della Carovana e Pranzo
- 14:00** Himanshu Nautiyal - Università di Trento  
*First principles investigation of transport properties of 2D  $SnX_2$  ( $X=S, Se$ ) and Janus  $SnSSe$  monolayer*

***Sessione 5: Thermoelectric generators and devices (II)***

***Chair: Dario Narducci***

- 14:20** Ketan Lohani - Università di Trento  
*Facile and low-cost fabrication of Cu/Zn/Sn-based ternary and quaternary chalcogenides thermoelectric generators*
- 14:40** Caterina La Terra - Politecnico di Milano  
*Modelling and characterization of thermal transfer in a thermoelectric generator based on catalytic combustion*
- 14:40 - 15:00** Coffee break
- 15:00** Discussione su collaborazioni, progetti e prossime conferenze nel campo della termoelettricità (Coordina: Dario Narducci)
- 16:30** Fine della Conferenza