International Thermoelectric Workshop on

New materials for direct conversion of heat into electricity

organized jointly by

The Institute of Advanced Manufacturing Technology and
AGH University of Science and Technology, Faculty of Materials Science and Ceramics

May 9-10, 2019 at AGH-UST Cracow,

AGH Centrum of Energy, building C-6, Czarnowiejska 36, Cracow

We sincerely invite students, PhD students, young scientists and persons interested in the subject of the workshop. Participation in the workshop **is free of chargé**. Registered participants have the possibility to present the results of research in the form of a poster and give a short oral presentation. Abstracts of all contributions will be published in a book of abstracts. For registration please send an email to dubiel@agh.edu.pl until April 15. We will provide further instructions.

Detailed information:
http://www.ios.krakow.pl, News

Chairman: Prof. Krzysztof Wojciechowski
Organizing committee : Aleksandra Dubiel, Taras Parashchuk, Janusz Prażuch

Wednesday, May 8th

8:00-9:00 **Registration**

Session I Fundamentals

9:00-9:40 **Prof. Yuri Grin,** *Chemical bonding in thermoelectric materials, myths and realities*
Max Planck Institute, Dresden, Germany

9:40-10:10 **Prof. Akira Yoshiasa,** *Precise structure analyses and crystal chemistry of pyrite-type compounds: properties and chemical bonding of group 15 and 16 elements*
Kumamoto University, Kumamoto, Japan

10:10-10:40 **Prof. Philippe Jund** *Defects and their influence on the thermoelectric properties of materials: an ab initio study*
Université de Montpellier, Montpellier France

10:40-11:10 **Coffee break**

11:10-11:40 **Prof. Laurent Chaput,** *Ab initio modeling of heat conduction: current status and challenges*
Université de Lorraine, Lorraine, France

11:40-12:10 **Prof. Janusz Tobola,** *Electronic structure calculations of materials converting energy: thermoelectrics and ion batteries*
AGH University of Science and Technology, Krakow, Poland

12:10-12:40 **Dr. Bartlomiej Wiendlocha,** *Thermopower of thermoelectric materials with resonant levels from ab initio calculations*
AGH University of Science and Technology, Krakow, Poland

12:40-13:00 **Achim Harzheim,** *Geometric and environmental influences on thermoelectric effects in graphene nanostructures*
University of Oxford, Oxford, England

13:00-14:00 **Lunch**

Session IIa – Materials

14:00-14:30 **Prof. Feng Gao,** *Fabrication and properties of $Ca_3Co_4O_9$ based thermoelectric ceramics*
Northwestern Polytechnical University, Xi'an, China

14:30- 15:00 **Prof. Bogdan Dabrowski,** *Thermoelectric and Structural Correlations in $(Sr_{1-x-y}Ca_xNd_y)TiO_3$ Perovskites*
Northern Illinois University, DeKalb, United States

15:00-15:30 **Prof. Lin Pan,** Evaluation of a novel mid-temperature thermoelectric *module based on p-type BiCuSeO and n-type Bi_2O_2Se*
Nanjing Tech University, Nanjing, China

15:30-16:00 **Coffee break**

16:00-16:20 **Dr. Taras Parashchuk,** *Concept of attuned electronic structure and mismatched phonon structure (AES- MPS) for new thermoelectric materials*
The Institute of Advanced Manufacturing Technology, Krakow, Poland

16:20-18:00

Rapid (3-5 min) oral poster presentations in English

Poster session

Thursday, May 9th

8:00-9:00 **Registration**

Session III Technologies

9:00-9:30 **Prof. Tsutomu Mashimo,** *Synthesis of nanomaterials by pulsed plasma in liquid*
Kumamoto University, Kumamoto, Japan

9:30-10:00 **Prof. Shinichi Yoda,** *Materials science in Space*
Japan Aerospace Exploration Agency, Tokyo, Japan

10:00-10:30 **Prof. Dorota Pawlak,** *Plasmonic materials / metamaterials by crystal growth*
Institute of Electronic Materials Technology, Warsaw, Poland

10:30-11:00 **Coffee break**

Session IIb Materials

11:00-11:30 **Prof. Yifeng Wang,** *Microstructural engineering for TiS_2-based thermoelectric materials*
Nanjing Tech University, Nanjing, China

11:30-12:00 **Prof. Igor Barchiy,** *New materials based on the phases of $Tl–B^{IV,V}–C^{VI}$ (B^{IV} – Sb,Bi, B^V – Sn,Pb, C^{VI} – S,Se,Te) systems*
Uzhhorod National University, Uzhhorod, Ukraine

12:00-12:30 **Prof. Tomasz Story,** *(Pb,Sn)Te thermoelectrics with transition metals*
Institute of Physics of the Polish Academy of Sciences, Warsaw, Poland

12:30-13:00 **Dr. Raul Cardoso-Gil** *Intermetallic semiconductor $FeGa_3$: from chemical bonding to thermoelectricity*
Max Planck Institute, Dresden, Germany

13:00-14:00 **Lunch**

14:00-14:30 **Prof. Lubomyr Nykyryj,** *Thermoelectric properties of PbTe-based multicomponent materials: bulk and thin films*
Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, Ukraine

14:30-15:00 **Dr. Michal Piasecki,** *Photo-induced enhancement of the power factor in low-dimension thermoelectric chalcogenides*
J. Dlugosz University Czestochowa, Czestochowa, Poland

15:00:15:30 **Dr. Igor Veremchuk,** *SPS for thermoelectric applications*
Max Planck Institute, Dresden, Germany

15:30:16:00 **Coffee break**

Session IV - Applications

16:00:16:30 **Prof. Zinovi Dashevsky,** *New way of an application for thermoelectric energy converters*
Ben-Gurion University of the Negev, Beer Sheba, Israel

16:30:17:00 **Prof. Mariusz Filipowicz,** *Review of thermoelectric generator applications in small scale biomass heating devices*
AGH University of Science and Technology, Krakow, Poland

17:00:17:30 **Prof. Sergiy Filin,** *The influence of thermal contact between the cooling surface and abject on the cooling speed of thermoelectric beverage coolers*
West Pomeranian University of Technology, Szczecin, Poland

17:30-17:50 **Marcin Borcuch,** *Thermoelectric generator as a thermal energy device*
AGH University of Science and Technology, Krakow, Poland

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