

# 2<sup>nd</sup> edition of the IBERIAN THERMOELECTRIC WORKSHOP

September 5-6, 2019  
Ciudad Real (Spain)

BOOK OF ABSTRACTS



## Invited Talks

Dr. Andrei Kovalevsky (Universidade de Aveiro)

"Specific approaches towards design of the thermoelectric oxides"

Dr. Paz Vaqueiro (University of Reading)

"Copper-containing sulfides as thermoelectric materials"

Dr. David Astrain (Universidad Pública de Navarra)

"Thermoelectric applications: looking for new possibilities"

Dr. Luís Miguel Valente (Universidade do Minho)

"Applying microsystems technology in the fabrication of thin-film thermoelectric devices"



## II IBERIAN THERMOELECTRIC WORKSHOP

5<sup>th</sup>-6<sup>th</sup> September 2019, Ciudad Real (Spain)



### PROGRAMME SCHEDULE

<b>Thursday 5<sup>th</sup> September</b>	
9:30 – 10:00	<b>REGISTRATION</b> (salón de grados, 1 <sup>st</sup> floor ETSII)
10:00 – 10:15	OPENING SESSION
10:15 – 10:55	<b>INVITED TALK:</b> <b>Andrei Kovalevsky</b> <b>Specific approaches towards design of the thermoelectric oxides</b> Thermoelectric properties of Half-Heusler superlattices and SrTiO <sub>3</sub> thin films (E. Chavez-Angel) Post heat-treatment effects on CaMnO <sub>3</sub> -based thermoelectrics grown by laser floating zone method (N.M. Ferreira) Structural evolution and correlation with thermoelectric properties in materials based on Bi <sub>2</sub> Te <sub>3</sub> , SnSe y CoSb <sub>3</sub> (N. M. Nemes)
10:55 – 11:10	
11:10 – 11:25	
11:25 – 11:40	
11:40 – 12:00	COFFEE BREAK
12:00 – 12:15	High thermoelectric performance in crystallographically textured <i>p</i> -type Bi <sub>x</sub> Sb <sub>2-x</sub> Te <sub>3</sub> and <i>n</i> -type Bi <sub>2</sub> Te <sub>3-x</sub> Se <sub>x</sub> produced from the liquid phase sintering of asymmetric colloidal nanocrystals (A. Cabot) Electrodeposited Bi <sub>2</sub> Te <sub>3</sub> inside inter-connected hollowed polymers (O. Caballero-Calero) Local atomic structure and synchrotron X-ray studies in thermoelectric R <sub>x</sub> Co <sub>4</sub> Sb <sub>12</sub> skutterudites synthesized under pressure (J.E. Rodriguez) Phase segregation and correlation with thermoelectric properties in filled CoSb <sub>3</sub> (J. Gainza)
12:15 – 12:30	
12:30 – 12:45	
12:45 – 13:00	
13:00 – 15:00	LUNCH
15:00 – 15:40	<b>INVITED TALK:</b> <b>Paz Vaqueiro</b> <b>Copper-containing sulfides as thermoelectric materials</b> Tetrahedrites for thermoelectric applications: challenges and possibilities (A. P. Gonçalves) Preparation of nanoprecursors for high-performance thermoelectric ceramics (A. Sotelo) Steady-state density functional theory for thermoelectric effects (N. Sobrino) Processes that produce more than 2.5 times improvement of the PF in Sb-doped SnO <sub>2</sub> permeated by ionic liquids (J. Garcia-Cañadas)
15:40 – 15:55	
15:55 – 16:10	
16:10 – 16:25	
16:25 – 16:40	
16:40 – 17:00	Break & Poster Session
17:00 – 17:15	Boosting thermoelectric efficiency by nano-engineering (M. Martín-Gonzalez) Thermoelectric properties of Bi <sub>2</sub> Te <sub>3</sub> films electrodeposited with different Te sources (C. V. Manzano)
17:15 – 17:30	
17:30 – 18:15	Posters Session
<b>21:00 Gala Dinner at Hotel Doña Carlota</b>	

## Specific approaches towards design of the thermoelectric oxides

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Sustainable energy supply to the population based on environmentally friendly and efficient technologies represents one of the major societal challenges in 21st century. One of the solutions is thermoelectric conversion of waste heat or solar heat into electricity, using sustainable and scalable devices, with self-sufficiency to enable mobile or remote applications. This talk will feature some promising strategies to design performing oxide-based thermoelectrics, including redox-promoted enhancement of the thermoelectric properties and a self-forming nanocomposite concept, where a controllable interplay between exsolution of the nanophases and modification of the host matrix suppresses the thermal transport, while imparting the high electrical performance. Particular attention will be given to laser floating zone technique as a tool to process ceramic samples appropriate for fabrication of the thermoelectric generators.

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