

Tuning properties of advanced energy materials using modern theoretical and experimental methods

90 IUVSTA WORKSHOP
TEMTEM 2023
Valencia - SPAIN
18th- 21st December 2023

Sponsors



18th December 2023, Valencia, Spain

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1. INTRODUCTION

TEMTEM 2023 is a IUVSTA workshop (WS) is a "key enabling technology" event based on the interdisciplinary expertise of theoretical and experiment groups covering the wide field of characterization of advanced materials. TEMTEM 2023 has focussed particularly on energy materials in the areas of solar energy, solar thermal, and batteries, from fundamentals to applied materials science. The plenary talks will show the latest advances in characterization techniques in the fields of diffraction, optics, spectroscopy, electrochemistry, artificial intelligence, among others.

This specific and timely thematic of the workshop as well as its innovative operational approach will promote interdisciplinary research activities, the training of human resources and will offer an efficient networking model for establishing effective and fruitful future collaborations.

2. PROGRAM AT A GRANCE

The meeting will last for four days. The scientific program will start with plenary talks given by well-known specialists, followed by informal discussions to encourage the direct exchange between young (students and post-docs) and more experienced researchers.

The number of non-invited participants is limited to 30 (both younger and experienced scientists) who will be also invited to present their own research in short informal talks and/or posters.

TEMTEM2023 Workshop: Tuning properties of advanced energy materials using modern theoretical and experimental methods

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THE TEMTEM2023 PROGRAM IN CENTRAL EUROPEAN TIME

	Monday 18 th December	Tuesday 19 th December	Wednesday 20 th December	Thursday 21 st December
8:30 AM	Inscription & welcome			
9:30 AM				
9:30 to 10:00	Sidney COHEN		Guy Lelay	Sofer Zdenek
10:00 to 10:30	Gema Martínez		Juan Martínez Pastor	Gonzalo Abellán
10:30 to 11:00	Klaus Attenkofer	José Alonso	Miguel Angel March	Robin Turnbull
11:00 to 12:00	Coffee break	Coffee break	Coffee break	Coffee break
12:00 to 12:30	Daniel Errandonea	César Alonso	Albert Ferrando	Alejandro Molina
12:30 to 13:00	Round Table	Eduardo Abenza	Round Table	Marie Krecmarova
13:00 to 13:30	Large Scientific installations	Launching of the AI platform "SMART MATERIAL"	Artificial Intelligence & Materials	Carles Milián
13:30 to 14:30	Lunch	Lunch		Lunch
14:30 to 15:00	Pablo Boix	Christian Teichert	Excursion Visiting Valencia	Borja Caja-Muñoz
15:00 to 15:30	Rafael Abarques	Amalia Patané		María Eugenia Dávila
15:30 to 16:00	Joaquin Soriano López	Archit Dhimgra		Joao Fonseca
16:00 to 17:00	Coffee break	Coffee break		Alejandro Martínez Serra and Andrii Boichuk
17:00 to 17:15	Anand Pandey	Hadj Yahia Seba		Abdilmjid El Khalfi
8:00 PM			Banquet	

3. EXTENDED PROGRAM

In this session the detailed program of the workshop is disclosed indicating speakers, titles of their talks and time of each slot.

Monday 18th December 2023 (morning)

Time	Speaker	Title & Filiation
09:30 to 10:00	Sidney Cohen	Humidity-Dependent Nanomechanical Properties of Halide Perovskites and their Correlation to Structure and Self-Healing. Weizmann Institute, Rehovot, Israel
10:00 to 10:30	Gema Martínez	ESRF-EBS: New scientific opportunities. European Synchrotron Radiation Facility, Grenoble, France
10:30 to 11:00	Klaus Attenkofer	How a Synchrotron Light Source Can Help You? ALBA Synchrotron, Barcelona, Spain
11:00 to 12:00		Coffee breaks
12:00 to 12:30	Daniel Errandonea	The use of high-pressure techniques in basic and materials science. ICMUV, University of Valencia, Valencia, Spain
12:30 to 13:30	Chairs: Daniel Errandonea & Ana Gomes Silva	Round Table “Large Scientific installations”. ICMUV, University of Valencia, Valencia, Spain & Nova University Lisbon, Lisbon, Portugal
13:30 to 14:30		Lunch

Monday 18th December 2023 (afternoon)

Time	Speaker	Title & Filiation
14:30 to 15:00	Pablo Boix	Strategic Crystallization Approaches for Metal Halide Perovskites. Institute of Chemical Technology (ITQ), Polytechnic University of Valencia & CSIC, Valencia, Spain
15:00 to 15:30	Rafael Abargues	New Paths for Metal Halide Perovskites: from Traditional Wet Chemistry to In Situ Synthesis, Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
15:30 to 16:00	Joaquín Soriano	Improving the OER Performance of Polyoxometalates through Molecular Engineering and Processing. Institute of Molecular Science (ICMol), University of Valencia, Valencia, Spain.
16:00 to 17:00		Coffee breaks
17:00 to 17:15	Anand Pandey	Light Illumination effects on the Charge Carrier Kinetics of hybrid perovskite films. Centre for Nanotechnology, Indian Institute of Technology Guwahati, Guwahati, India.

Tuesday 19th December 2023 (morning)

Time	Speaker	Title & Filiation
10:30 to 11:00	José Antonio Alonso	High-pressure synthesis of thermoelectric materials. Materials Science Institute of Madrid (ICMM), CSIC, Madrid, Spain
11:00 to 12:00		Coffee breaks
12:00 to 12:30	César Alonso	Artificial intelligence for improving and discover of avanced materials. Hi-Iberia, Madrid, Spain
12:30 to 13:00	Eduardo Abenza	Smart Material: An artificial intelligence platform for optimization and discovery of advanced materials, Hi-Iberia, Madrid, Spain
12:30 to 13:00	Eduardo Abenza	Launching of the AI platform "SMART MATERIAL"
13:30 to 14:30		Lunch

Tuesday 19th December 2023 (afternoon9

Time	Speaker	Title & Filiation
14:30 to 15:00	ChristianTeichert	Piezoresponse Force Microscopy for the study of advanced energy materials, University of Leoben and President of the Austrian Physical Society. Leoben, Austria
15:00 to 15:30	Amalia Patané	Manufacturable 2D semiconductors for electronics. University of Nottingham. Nottingham, United Kingdom
15:30 to 16:00	Archit Dhingra	Layered GeI ₂ : a wide-bandgap semiconductor for thermoelectric applications. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
16:00 to 17:00		Coffee breaks
17:00 to 17:15	Hadj Yahia Seba	Good quality resonant microcavity based on porous silicon for photonic application, University of Ghardaia. Ghardaia, Argeria.

Wednesday 20th December 2023 (morning)

Time	Speaker	Title & Filiation
09:30 to 10:00	Guy LeLay	Reducing the Computational Energy Budget: Design of a New Platform for Topological Quantum Computation. Aix-Marseille University - PIIM-CNRS, Campus de Saint Jerome. Marseille, France.
10:00 to 10:30	Juan Martínez Pastor	2D and 3D tin perovskites for photonics. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
10:30 to 11:00	Miguel Ángel García March	Aspects of machine learning for anomalous diffusion. University Institute of Pure and Applied Mathematics (IUMPA). Polytechnic University of Valencia, Valencia, Spain.
11:00 to 12:00		Coffee breaks
12:00 to 12:30	Albert Ferrando	Nonlinear Photonics with Leading-Edge Materials. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
12:30 to 13:30	Chairs: Albert Ferrando María C. Asensio	Round Table: Artificial Intelligence & Materials Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain & Materials Science Institute of Madrid (ICMM), CSIC, Madrid, Spain
13:30 to 14:30		Lunch
14:30 to 17:30		Excursion: Visiting Valencia
20:00 to 22:00		Banquet

Thursday 21st December 2023 (morning)

Time	Speaker	Title & Filiation
09:30 to 10:00	Sofer Zdenek	2D Crystals for Electronic Applications and Energy Storage. University of Chemistry and Technology of Prague. Prague, Czech Republic
10:00 to 10:30	Gonzalo Abellán	Two-dimensional materials for energy storage and conversion. Institute of Molecular Science (ICMol), University of Valencia, Valencia, Spain.
10:30 to 11:00	Robin Turnbull	Band-Gap Behavior During Compression in a Metal Iodate Semiconductor. University of Valencia, Valencia, Spain.
11:00 to 12:00		Coffee breaks
12:00 to 12:30	Alejandro Molina	Optics and Magnetism in the new generation of 2D materials. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
12:30 to 13:00	Marie Krecmarova	Photoemission study on stability of two-dimensional perovskites single crystals for optoelectronic applications. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
13:00 to 13:30	Carles Milián	Two-Dimensional Photonic Snake States and Frequency Combs. Department of Applied Mathematics, ETSII, Pure & Applied Maths Institute (IUMPA) and the Polytechnic University of Valencia (UPV), Valencia, Spain.
13:30 to 14:30		Lunch

Thursday 21st December 2023 (afternoon)

Time	Speaker	Title & Filiation
14:30 to 15:00	Borja Caja	Operando Monitoring of an Organic Redox Flow Battery via NMR/MRI. Science Institute of Madrid (ICMM), CSIC, Madrid, Spain
15:00 to 15:30	María E. Dávila	Electrochemical characterization of lithium-ion batteries. Science Institute of Madrid (ICMM), CSIC, Madrid, Spain
15:30 to 16:00	Joao Fonseca	Decoding LiFePO ₄ : Insights into Ion Diffusion Networks. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
16:00 to 16:30	Alejandro Martínez	First Approach to Discover More Stable Metal Halide Perovskites for Solar Cells Using Artificial Intelligence. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
16:30 to 17:00	Andrii Boichuk	Surface tuned two dimension layered Na _x MnO ₂ as high performance and structural stable electrode materials for metal ion energy application. Institute of Materials Science of the University of Valencia (ICMUV), Valencia, Spain
17:00 to 17:15	Abdilmjid El Khalfi	Performance analysis of zirconium sulfide (ZrS ₂) as a buffer layer for Sb ₂ Se ₃ solar cells: numerical modeling Moulay Ismail University. Rissani, Morocco

4. VENUE OF THE TEMTEM 2023 WORKSHOP

The workshop will be held at the “[House of Science. Delegation of the CSIC in the Valencian Community \(CSIC\)](#)”, ideally located in the heart of the old city of Valencia, close to many hotels, bars and restaurants, and just few minutes walk from the metro and rail stations.

Event address:

House of Science. Delegation of the CSIC
in the Valencian Community
Calle Bailía, 1, 46003 VALENCIA

Restaurant address:

The Restaurant SOFOKO address is:
Plaça de l'Arquebisbe, 5, Ciutat Vella, 46003, VALENCIA

5. COMMITTEES

Organizing & Scientific Committee:

Prof. Ana G. Silva (Physics Department, NOVA University, Lisbon, PORTUGAL)

Prof. Maria C. Asensio (ICMM, CSIC, Madrid, SPAIN)

Prof. Juan F. Sánchez Royo (ICMUV, University of Valencia, Valencia, SPAIN)