

# Power of Interfaces - program v1 (4/8/2022)

Wednesday, Oct. 5th (sala Georges Bernanos) - Pol school

9:30		Registration and opening
10:00	<b>Ainara Agudero</b>	Fundamentals of defect chemistry
11:00	<b>Stephen Skinner</b>	Bulk ion transport
12:00	<b>Louis De Taeye</b>	Fundamentals of solid state batteries
13:00		Lunch
14:30	<b>Juergen Fleig</b>	Thermodynamics and kinetics of SOCs
15:15	<b>Miguel Laguna</b>	SOC technologies
16:00		Break
16:15	<b>John Kilner</b>	Ion beam techniques
17:00	<b>Alexander Chroneos</b>	Material modelling and simulations
17:45	<b>Dino Klotz</b>	Impedance spectroscopy

**Project meetings (for project members only - sala Espai D)**

10:00	Harvestore project meeting
15:00	Epistore project meeting

Thursday, Oct. 6th (sala Lluís Dòmenec i Muntaner) - Pol workshop

8:15		Registration
8:45		Opening
	<b>Advanced techniques</b>	
9:00 K	<b>Nicola Perry</b>	Shining light on defect kinetics in mixed conducting oxide thin films
9:30 I	<b>Monica Burriel</b>	Original in situ Raman spectroscopy approaches to characterise solid oxide cell electrodes and electrolytes
9:50 C	<b>Giulio Cordaro</b>	High-Throughput Investigation of Combinatorial Thin Film Ternary System as Electrolytes for Protonic Ceramic Cells
10:05 C	<b>Francesco Chiabrera</b>	Defect Chemistry of Lanthanum Ferrite Thin Films during Ion Intercalation in alkaline electrolytes
10:20 C	<b>Juande Sirvent</b>	High-throughput methodologies for the study of cathodes in solid oxide cells: the $\text{La}_{0.8}\text{Sr}_{0.2}\text{Co}_x\text{Mn}_y\text{Fe}_{1-x-y}\text{O}_3$ perovskite family
10:35		Break
	<b>Devices</b>	
11:00 K	<b>Magda Titirici</b>	Beyond Li-ion batteries: performance, materials diversification, and sustainability
11:30 K	<b>Miguel Laguna</b>	Novel architecture designs for solid state energy devices by laser machining
12:00 I	<b>Marta Fernández</b>	Micro and nanotechnologies for autonomous energy devices
12:20 C	<b>Alexander Schmid</b>	Rechargeable oxide ion batteries based on mixed conducting intercalation electrodes
12:35 C	<b>Sonia Escolástico</b>	Direct electrocatalytic CO <sub>2</sub> reduction in a tubular protonic membrane reactor
12:50		Lunch

### New materials

14:30	I	<b>Miriam Botros</b>	High-Entropy materials for energy applications
14:50	C	<b>Fjorelo Buzi</b>	A Cobalt-based nanocomposite for increased electrochemical stability at high temperature in Solid Oxide Fuel Cell
15:05	C	<b>Tatsumi Ishihara</b>	Bismuth niobium oxychloride, $\text{Bi}_4\text{NbO}_8\text{Cl}$ , as a New Layered Oxide Ion Conductor
15:20	C	<b>Wenrui Zhang</b>	New Oxide-ion Conductors of the Dion–Jacobson phases $\text{CsM}_2\text{Ti}_2\text{NbO}_{10-\delta}$ (M = Bi, La)
15:35			Break

### Interfaces and surfaces

16:00	I	<b>John Irvine</b>	Nanoengineering of Electrochemical interfaces
16:20	C	<b>Zijie Sha</b>	The effect of operating environments on surface composition evolution of perovskite-type mixed conducting electrodes
16:35	C	<b>Filippo Colombo</b>	Bimetallic exsolution from perovskite oxides: an insight on mechanistic aspects through in-situ measurements for tailoring catalytic selectivity
16:50	C	<b>Alfonso Carrillo</b>	Tuning ternary alloyed nanoparticle composition by exsolution
17:05	C	<b>Matthew Wells</b>	Towards High-Performance, Low-Temperature Solid Oxide Cells with Vertically Aligned Nanocomposite Films
17:30			Poster session

## Friday, Oct. 7th (sala Lluís Dòmenec i Muntaner) - Pol workshop

### Modelling

9:00	K	<b>Alexander Opitz</b>	Geometrically well-defined model systems as a powerful tool for a deeper understanding of electrochemical elementary processes in solid oxide cell research
9:30	I	<b>Aleksandar Staykov</b>	Oxygen activation and dissociation on transition metal free complex oxide surfaces. Insights from the theory
9:50	C	<b>Kulbir Ghuman</b>	Modeling Defects in Polycrystalline Materials
10:05	C	<b>Dennis Kemp</b>	Recipes for superior ionic conductivities in thin-film ceria-based electrolytes
10:20	C	<b>Jose Carlos Madrid Madrid</b>	Molecular Dynamics Study of Oxygen-Ion Diffusion in Yttria-Stabilized Zirconia Grain Boundaries
10:35	C	<b>Silvère Panisset</b>	A 3D Finite Element Method model designed for nanocolumnar $\mu\text{SOC}$ oxygen electrodes
10:50			Break

### Protonics

11:15	K	<b>Sossina Haile</b>	Proton Transfer Kinetics at Interfaces with the Superprotonic Electrolyte $\text{CsH}_2\text{PO}_4$
11:45	K	<b>Hiroshige Matsumoto</b>	Insertion of electron-blocking layer at steam/air electrode for suppression of electronic leakage in proton-conductor cells
12:15	C	<b>María Balaguer</b>	Evaluation of the stability of PCFC electrodes based on double perovskite cobaltites
12:30	C	<b>Aleksandra Mielewczyk-Gryń</b>	Influence of stoichiometric complexity on performance of multi-constituent ceramic protonic conductors
12:45	C	<b>Laura Almar</b>	Redox-stable electrodes for $\text{CH}_4$ conversion in proton ceramic cells
13:00			Lunch

### Heterostuctures

14:30	K	<b>Dino Klotz</b>	Grain Boundaries under Light – What is happening
15:00	I	<b>Judith Driscoll</b>	Using vertically aligned nanocomposites thin film oxides in electrochemical devices
15:20	C	<b>Kosova Kreka</b>	Towards better oxygen electrodes for r- $\mu$ SOC: Investigation of LSC and LSM based VAN electrodes under bias.
15:35	C	<b>Alexander Stangl</b>	Enhancing SOC cathode performance using tailored nano-columnar $\text{La}_2\text{NiO}_{4+\delta}$ thin films
15:50	C	<b>Anton Kaus</b>	Hybrid oxide superlattices as electrocatalysts for the oxygen evolution reaction in alkaline electrolyte
16:05			Prizes and closing

### **Poster session (6/10, 17:30 to 19:00, espai D)**

<b>Alexander Bonkowski</b>	A molecular-dynamics study of oxygen diffusion in polycrystalline $(\text{La,Sr})\text{FeO}_3$
<b>Apostolos Panagiotopoulos</b>	State-of-the-art surface analysis via simultaneous positive and negative ion detection.
<b>Jingdong Xu</b>	Interface characterization of exposed lanthanum strontium chromium ferrite air electrode
<b>Adeel Riaz</b>	$\text{La}_2\text{NiO}_{4+\delta}$ Electrodes by Pulsed-Injection MOCVD: Deposition Strategies and Microstructural Characterization
<b>Jair Gabriel Triana-Pequeño</b>	Exsolved nanoparticles from doped $\text{LaAlO}_3$ perovskite: towards lowering the exsolution temperature
<b>Rosalía Cid Barreno</b>	XPS insight on the improved polymer electrolyte–Li metal interface on high-voltage solid-state batteries driven by additives
<b>Lorenzo Fallarino</b>	Building 3D metal anode for Lithium-Ion Batteries
<b>Jan Speulmanns</b>	TBA
<b>Yuta Yasui</b>	Oxide-ion conductivity and structural disorder of hexagonal perovskites $\text{Ba}_7\text{Nb}_3.9\text{Mo}_{1.1}\text{O}_{20.05}$ and $\text{Ba}_3\text{MNbO}_{8.5}$ (M = Mo, Nb)
<b>Claudia Steinbach</b>	Investigating the space charge at mixed ionic and electronic conducting oxide heterojunctions
<b>Carmen de la Torre Gamarra</b>	Scalable manufacturing of electrode-supported planar solid oxide electrolyzer cells (SOECs)
<b>Philip Klein</b>	Investigation and feasibility study of $\text{SrTiO}_3$ thin films in high – temperature solid oxide solar cells
<b>Martin Krammer</b>	TBA
<b>Riho Morikawa</b>	New hexagonal perovskite-related oxides exhibiting high proton conductivity
<b>Francesco Chiabrera</b>	The impact of antisite defects on the oxygen mass transport properties of $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnyO}_{3\pm\delta}$ thin films
K	Keynote, 30 min including questions
I	Invited, 20 min including questions
C	Contributed, 15 min including questions