

1ST / SESDIM

SUSTAINABLE ENERGY STORAGE DAYS IN MADRID

8TH-11TH OCTOBER 2019

Spanish National Research Council (CSIC) C/ Serrano, 117 - **MADRID**

REGISTER IN: sesdim 2019

LECTURES GIVEN BY:

Prof. Clare P. Grey
(University of Cambridge)



Prof. Jean Francois Gohy
(Universite Catholique de Louvain)



Prof. Ulrich S. Schubert
(University of Jena)



Prof. M. E. Arroyo-de Dompablo
(Universidad Complutense de Madrid)



Prof. Elizabeth Castillo Martínez
(Universidad Complutense de Madrid)



Prof. Martin Sjödin
(Uppsala University)



Prof. Ulrich Stimming
(Newcastle University)



Prof. Christine Frayret
(Univ. of Picardie Jules Verne-CNRS)



Prof. Pilar Ocón
(Universidad Autónoma de Madrid)



Prof. Ergang Wang
(Chalmers University)



Please, see all the speakers in the full programme

SESDIM 2019 organized by:
J. Carretero González & P. Navalpotro Molina
Polymer Composite Group (www.nanocomp.ictp.csic.es)
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8TH-11TH
OCTOBER
2019

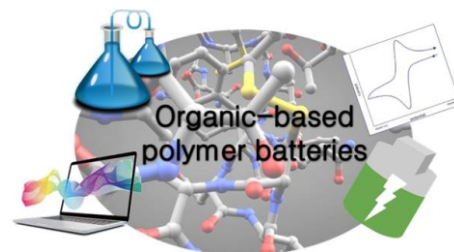
In **October 2019** worldwide-distinguished academic and industrial experts will train and share their knowledge on energy storage during **4 days in Madrid**.

SESDIM is a **FREE cost** event organized by the *Polymer Composite Group* and sponsored by the **i-LINK initiative** from the Spanish National Research Council (CSIC). Everyone is **WELCOME to join us!**

8TH-9TH OCTOBER 2019.

AUTUMN SCHOOL: ORGANIC-BASED POLYMER BATTERIES

- State of the art organic and polymer active materials synthesis.
- New theoretical methods (DFT, coarse grained).
- Advanced characterization tools (in situ NMR and electrochem techniques).



10TH-11TH OCTOBER 2019.

SYMPOSIUM: SUSTAINABLE ELECTROCHEMICAL ENERGY STORAGE THROUGH MATERIALS INNOVATION

- Research & development strategies for integrating sustainable material chemistries into electrochemical energy storage systems.
- Metal ion batteries beyond lithium ion.
- Innovative redox flow and proton batteries.
- Advanced supercapacitors.
- New theory models and computer simulation strategies.
- Recycling approaches for Li-ion batteries.



AUTUMN SCHOOL ORGANIC-BASED POLYMER BATTERIES

October, 8th – Tuesday

9:00-9:15

Welcome and Introduction

Organic-Polymer Battery Materials

9:15-10:00

Lecture

Electroactive Polymer Nanoparticles for Energy Storage

Javier Carretero González - ICTP-CSIC – Spain

10:00-10:45

Lecture

Conducting Redox Polymers for Battery Applications

Martin Sjödin - Uppsala University - Sweden

10:45-11:15

Coffee Break

11:15-12:00

Lecture

Innovative Organic-based Materials for Electrochemical Energy Storage

Rebeca Marcilla - Imdea Energía - Spain

12:00-12:45

Lecture

Design and Synthesis of Conjugated Polymers

Ergang Wang - Chalmers University - Sweden

13:00-15:00

Lunch

Organic-Polymer Battery Materials Characterization

15:00-15:45

Lecture

Metal ion conducting Polymer Electrolytes

Jean Yves Sanchez - uc3m - Spain

15:45-16:30

Lecture

Polymer Redox Booster for Polymer Redox Flow Batteries

Ulrich Stimming - Newcastle University - UK

Theory

16:30-17:15

Lecture

Latest advances with DFT-theoretical models in Batteries and Electrodes containing Organic Materials and Metal-ions

Estefanía López Marne – Universidad de Barcelona – Spain

AUTUMN SCHOOL - TUESDAY OCTOBER, 8th

October, 9th - Wednesday

Organic-Polymer Battery Materials Synthesis and processing

9:15-10:00
Lecture
Design, synthesis and characterization of printable thin film polymer and scalable organic/polymer flow batteries
Ulrich S. Schubert - University of Jena - Germany

10:00-10:45
Lecture
Redox Polymers based on Nitroxide Radicals
Jean Francois Gohy - Catholic University of Louvain - Belgium

10:45-11:15
Coffee Break

11:15-12:00
Lecture
Ionic-Liquid Electrolytes for Metal-ion Batteries
Enrique Morales - ICTP-CSIC - Spain

Characterization

12:00-12:45
Lecture
Organic molecules and polymers for advanced Li-S batteries
Adriana Navarro-Suarez - Chalmers University - Sweden

13:00-15:00
Lunch

15:00-15:45
Lecture
(to be announced)
Clare P. Grey - University of Cambridge - UK

Theory

15:45-16:30
Lecture
Introduction to Materials Modelling
Christine Frayret - Univ. of Picardie Jules Verne-CNRS - France

16:30-17:15
Lecture
Modeling the Thermodynamics of Redox-Active Polymers in Coarse Grained Simulations
Pascal Hebbeker - Charles University in Prague - Czech Republic

SYMPOSIUM

SUSTAINABLE ELECTROCHEMICAL ENERGY STORAGE THROUGH MATERIALS INNOVATION

October, 10th - ThursdaySYMPOSIUM - THURSDAY OCTOBER, 10th

9:00-9:10

Welcome and Introduction

9:10-10:00

Plenary Talk*(to be announced)*

Clare P. Grey - University of Cambridge -UK

10:00-10:30

Invited Talk

Manganese Oxide as Efficient Catalyst for Oxygen Reaction Reduction in High Performance Al-Air Batteries

Pilar Ocón - Universidad Autónoma de Madrid - Spain

10:30-11:00

Invited Talk

Electrolyte, Solvation Shell and Interphase for Ca and Mg Metal Anode Based Batteries

Alexander Ponrouch - ICMAB-CSIC - Spain

11:00-11:30

Coffee Break

11:30-12:00

Invited Talk

Exploration of New Routes of Innovation for the Discovery of Optimal Organic Electrodes in Next Generation Batteries: Promising Strategies from Computer Simulation

Christine Frayret - Univ. of Picardie Jules Verne-CNRS - France

12:00-12:30

Invited Talk

Ca conducting polymer electrolytes

Jean Yves Sanchez - uc3m - Spain

12:30-13:00

Invited Talk

3D Graphenic Frameworks with Designed Nanopores and Edge Sites for Energy Storage

Raul Berenguer - Universidad de Alicante - Spain

13:00-14:30

Lunch

15:00-15:50

Plenary Talk*Polymer-based batteries*

Ulrich S. Schubert - University of Jena - Germany

15:50-16:20 *Solid and Gel Polymer Electrolytes Based on Fluorine Containing Copolymers*
Invited Talk Jean Francois Gohy - Catholic University of Louvain - Belgium

16:20-16:50 *From Lab to Market: Crossing the Valley of Death*
Invited Talk Jesús Palma - Imdea Energía - Spain

16:50-18:00 Industry Round table

20:00 **Music-Dinner**

October, 11th - Friday

9:10-10:00 **Plenary Talk** *Polyoxometalate Based Redox Flow Batteries*
Ulrich Stimming - Newcastle University - UK

10:00-10:30 *Aqueous Biphasic Systems as Redox Electrolytes for Membrane-Free Batteries*
Invited Talk Paula Navalpotro Molina - ICTP-CSIC - Spain

10:30-11:00 *In Situ NMR Metrology Reveals Reaction Mechanisms and Electron Transfer Rates in an Operating Flow Battery*
Invited Talk Evan W. Zhao - University of Cambridge - UK

11:00-11:30 **Coffee Break**

11:30-12:00 *Quinone Based Conducting Redox Polymer batteries*
Invited Talk Martin Sjödén - Uppsala University - Sweden

12:00-12:30 *The influence of Polymer Architecture on Redox-Active Polymers*
Invited Talk Pascal Hebbeker - Charles University of Prague - Czech Republic

12:30-13:00 *Charging Mechanisms in Supercapacitors*
Invited Talk Alex Forse - University of Cambridge - UK

13:00-14:30 **Lunch**

15:00-15:50 Plenary Talk	<i>Materials for Sustainable Energy Storage: from Sodium to Potassium ion based Batteries</i> Elizabeth Castillo Martínez - Universidad Complutense Madrid - Spain
15:50-16:20 Invited Talk	<i>Structural-electrochemical Relationships of Layered Sodium Transition Metal Oxides</i> Gregorio Ortiz - Universidad de Córdoba - Spain
16:20-16:50 Invited Talk	<i>Discovery of Cathode Materials for Rechargeable Ca Batteries by Computational Means</i> M. E. Arroyo-de Dompablo - Universidad Complutense de Madrid - Spain
16:50-17:20 Invited Talk	<i>In-situ Approaches for the Preparation of Polythiophene-Derivative Cellulose Composites Electrodes for Pseudocapacitors</i> Mario Hoyos - ICTP-CSIC - Spain
17:20-17:50 Invited Talk	<i>Reusing and Recycling of Secondary Batteries</i> Juan Manuel Paz García - Universidad de Málaga - Spain
17:50-18:00	Conclusion Remarks