

## Key informations

- **When:** July 08-11, 2024
- **Where:** UTBM/FEMTO-ST-Energy Dpt and FCLAB, Belfort – France
- **Who:** PhD and Engineer Students, researchers, R&D staff...
- **What:** Panel sessions, lectures, trainings, interactive, social event "Gala diner"

### • Registration fees:

- €250\* (early bird, before June 10th, 2024)
- €350\* (standard registration, after June 10th 2024)
- Including: all lectures and meetings participation, Summer School bag and proceedings, lunches and coffee breaks, banquet, gala diner, cultural program

Online registration : <http://www.utbm.fr/summer-school-fclab>

\*a reduction of 25€ will be applied for inscriptions from FEMTO-ST and LEMTA

### • Contacts:

- **Summer School Chair:** Pr. Abdesslem Djerdjir - abdesslem.djerdjir@utbm.fr
- **Summer School registration manager:** Dr. Daniela Chrenko - daniela.chrenko@utbm.fr
- **Summer School administrative managers:** Mrs. Carine Diez - karine.diez@univ-fcomte.fr, Mrs. Isabelle Christen - isabelle.christen@univ-fcomte.fr, Mrs. Sophie Granon - sophie.granon@femto-st.fr
- **Website:** <http://www.utbm.fr/summer-school-fclab>

### • Scientific committee

- **Chair:** Pr. Abdesslem Djerdjir (FEMTO-ST, FC LAB, GdR SEEDS)
- **Co-chair:** Dr. Daniela Chrenko (FEMTO-ST, FC LAB, GdR SEEDS)
- **Industrial relations:** Pr. Salah Laghrouche (FEMTO-ST, FC LAB, GdR SEEDS)
- **Members:** David Bouquain, Djafar Chabane, Issam Salhi, Elina Breaz, Elodie Pahon, Youcef Ait-Amirat

## Organised by



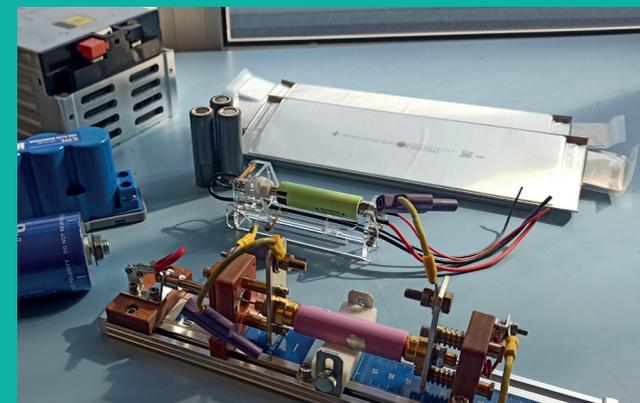
## In cooperation with



# INTERNATIONAL SUMMER SCHOOL

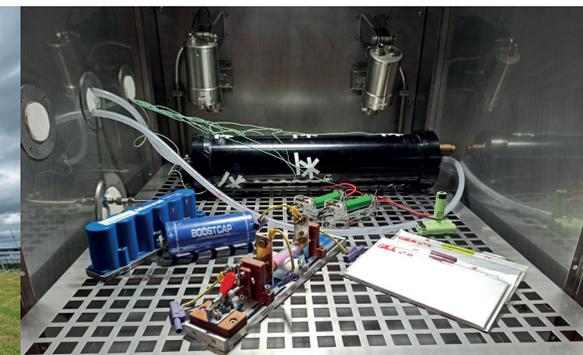
July 8-11, 2024

Electrochemical and Hydrogen Energy Storage for Mobility and Microgrids



# INTERNATIONAL SUMMER SCHOOL

## Electrochemical and Hydrogen Energy Storage for Mobility and Microgrids



### Summary

From 8 to 11 July 2024, the energy department of FEMTO-ST and FCLAB and the CNRS research group SEEDS, in UTBM Belfort- France, an International Summer school on the topic of Electrochemical and Hydrogen Energy Storage. The summer school is intended for PhD, engineer and master students, and engineers interested in the latest developments in future mobility and micro-grid systems.

### Motivation and objectives

In a world in the midst of an energy transition, sustainable mobility, and the resilience of energy microgrids have become major imperatives to ensure a cleaner and more secure energy future. Electrochemical storage and the use of hydrogen are emerging as key solutions to address these challenges, providing efficient, clean, and versatile energy storage opportunities. The Summer School on Electrochemical and Hydrogen Energy Storage for Mobility and Microgrids aims to bring together key players from industry and research to explore these cutting-edge technologies and catalyze innovation in these vital areas.

During four days, the knowledge acquired by the speakers through their academic and industrial research projects in the field of electrochemical and hydrogen energy storage will be transmitted through seminars, courses, tutorials, and practical demonstrations. The aim is to deepen participants' knowledge by providing them with advanced training focused on the applications of electrochemical storage and

hydrogen in the field of mobility and energy microgrids. Attendees will have the opportunity to explore the latest technological advances, best practices, and relevant case studies in these ever-evolving fields. An interdisciplinary approach will be implemented by bringing together experts from various fields such as chemistry, physics, electrical engineering, thermal engineering, and control. This diversity of expertise will foster a holistic understanding of the challenges and opportunities related to electrochemical and hydrogen storage for mobility and microgrids. The summer school also aims to facilitate the sharing of experiences and best practices between participants, researchers and industrialists through presentations and interactive discussions. These stimulating exchanges will encourage the emergence of collaborations and innovative research projects in the field. This will provide PhD students, engineering, and master's students as well as young professionals with the opportunity to develop their professional network by interacting with academic and industry experts.

### Program

Day 1 08/07/2024		Day 2 09/07/2024		Day 3 10/07/2024		Day 4 11/07/2024			
<b>Panel Session 1</b>		<b>Panel Session 2</b>		<b>Courses Session 3</b>		<b>Courses Session 4</b>			
08:00	Reception and Registration	08:00	<b>Conf 3 - Academic</b> <b>Academic - Sox Battery</b> <b>diagnostics&amp;prognostics</b> (Prof. Mohamed Benbouzid, UBO)	08:00	<b>Course 3 - Electrochemical storage</b> (Dr. Issam Salhi, UTBM)	<b>Course 4 - HIL for energy storage</b> (Prof. David Bouquain & Dr. Youcef Ait-Amirat, UFC)	08:00	<b>Course 4 - HIL for energy storage</b> (Prof. David Bouquain & Dr. Youcef Ait-Amirat, UFC)	<b>Course 3 - Electrochemical storage</b> (Dr. Issam Salhi, UTBM)
08:15		08:15		08:15			08:15		
08:30		08:30		08:30	08:30				
08:45		08:45		08:45	08:45				
09:00		09:00		09:00	09:00				
09:15	Opening session	09:15		09:15	Coffee - Break		09:15	Coffee - Break	
09:30	<b>Conf 1 - Industrial: Electrochemical storage</b> (Dr. Romain Tabus - SWOOP ENERGY)	09:30	Coffee - Break	09:30	Trainig Course 3	Trainig Course 4	09:30	Trainig Course 4	Trainig Course 3
09:45		09:45		09:45			09:45		
10:00	<b>Hydrogen storage (Mr Emmanuel Bouteleux - MINCATEC)</b>	10:00		10:00			10:00		
10:15		10:15		10:15			10:15		
10:30	Coffee - Break	10:30		10:30			10:30		
10:45		10:45	<b>Conf 4 - Industrial: Energy management of Fuel Cells Supplied by Solid Prolongation and Electricity Generation</b> ( Dr. Ramzi Saidi, MINCATEC)	10:45	Plenary Course 1 Thermal Solar Energy Storage and Heat exchange (Prof. Mounir Aksas, ER <sup>2</sup> SD)		10:45	Plenary Course 2 HYD-DRIVE - A World's first hydrogen-powered semi-trailer (Prof. Abdeslem Djerdir & Dr. Nadhir Lebaal, UTBM)	
11:00		11:00			11:00			11:00	
11:15	<b>Conf2 - Academic Materials for Batteries</b> (Prof. Ismael Saadoun, UM6P)	11:15		11:15	Lunch		11:15	Lunch	
11:30		11:30		11:30	Lunch		11:30	Lunch	
11:45		11:45		11:45	Lunch		11:45	Lunch	
12:00		12:00		12:00	Lunch		12:00	Lunch	
12:15		12:15		12:15	Lunch		12:15	Lunch	
12:30	Lunch	12:30		12:30	Lunch		12:30	Lunch	
<b>Courses Session 1</b>		<b>Courses Session 2</b>		<b>Half Day Break</b>		<b>Half Day Break</b>			
14:00	<b>Courses 1 - H2 storage</b> (Dr. Djafar Chabane, UTBM)	14:00	<b>Courses 2 - Impedence spectrometry</b> (Dr. Elodie Pahon, UTBM)	14:00	Cultural program	Cultural program	14:00	Cultural program	Visits of platforms UTBM & UFC
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15:30	Coffee - Break	15:30	Coffee - Break	15:30			15:30		
15:45		15:45		15:45			15:45		
16:00	Training of Course 1	16:00	Training of Course 2	16:00			16:00		
16:15		16:15		16:15			16:15		
16:30		16:30		16:30			16:30		
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18:15		18:15		18:15			18:15		
				20:00	Gala Dinner		End of Summer School		