

PhD Summer School 2022

Electrochemical Accumulators and Advances in Aqueous Rechargeable Batteries

5-9 September 2022, Virtual

Organised by

EU Horizon 2020 Project
LOLABAT - Long Lasting BAtteries



University of Genoa, Italy



**Università
di Genova**

Stockholm University, Sweden



**Stockholm
University**

Course Content and Schedule

Date and Time	Topics	Instructor	Duration
5/09/2022	<p>Overall energy issues in relation to rechargeable battery systems and how chemistry, physics, and engineering applies to batteries</p> <p>Basic static definitions: ΔG, ΔS, electrochemical cell, anode, cathode, Nernst eq.</p> <p>Nickel based chemistries with aqueous electrolytes, NiMH, NiCd, NiFe in relation to non-aqueous Li-based batteries, LCO, LMO, LFP, NMC, NCA.</p>	DN	4 Hrs
6/09/2022	<p>Lead acid batteries fundamental properties, voltage vs SOC, internal impedance, charge acceptance, energy density and longevity - in relation to other aqueous batteries - benchmark for new chemistries, Ni-electrodes vs. Air electrodes.</p>	GK	4 Hrs
7/09/2022	<p>Background on performance parameters and operational factors in battery systems</p>	PC	4 Hrs
8/09/2022	<p>Electrochemical techniques in continuous (cyclic voltammetry) and alternating current (impedance spectroscopy), in relation to different technologies characterization.</p> <p>Theory and practical examples, experimental set-up.</p>	PC	4 Hrs
9/09/2022	<p>NiZn batteries and LOLABAT project LOLABAT demo cases</p>	FF & UNIGE	4 Hrs

Course Description

The course aims to provide to future PhDs, notions and fundamentals on emerging materials and technologies for electrochemical energy production and storage: rechargeable batteries.

Course Organisation

The course will take place in virtual mode (Teams/WebEx). It will be held in English.

Instructors

UNIGE, Italy- Prof. M. Paola Carpanese (PC)
SU, Sweden – Prof Dag Noréus (DN), Dr. Gunder Karlsson (GK)
SUNERGY, France – Fabrice Fourgeot (FF) and UNIGE team

Duration And Credits

The course (20 hours) will consist of 5 lessons, 4 hours each from 5 Sep 2022 to 9 Sep 2022 (9 AM to 1 PM CET), and, for a total of 5 CFUs.

Exam – Oral/Homework - 1 from PC , 1 from DN/GK

Course Fees And Registration

Course Fees : 80 Euros

Registration:

1. Create an account on :

<https://easychair.org/account/signup>

1. Register using following link :

<https://easychair.org/my/conference?conf=phdsummercourse2022>

(On this page, on the right top corner, click on "register yourself")