



IWES 2021 Meeting Report

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Workshop goal. The IWES 2021 online workshop (First Italian Workshop on Energy Storage) has been organized on the Zoom online platform on the 24-25-26 February 2021. This workshop aimed at gathering scientists and engineers working on batteries in public bodies (universities and national labs) and in private companies from the Italian community and beyond. The goal was to organize an interactive forum, where research achievements and goals can be shared easily and safely among all the battery stakeholders. The scientific program featured selected presentations related to topics that cover fundamental and applied research in electrochemical energy storage.

Organization details. The IWES 2021 workshop has been promoted by the GISEL association (Italian Group for Electrochemical Energy Storage) and all the communication and organization campaign has been hosted on the GISEL website (<http://www.giselnetwork.it/workshop-2021>). The workshop was organized under the partnership of the INSTM (Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali) that supported the event. Other Italian and international institutions/organization generously supported (Società Chimica Italiana-Divisione di Elettrochimica, Centro Levi-Cases) or patronized (Battery 2030+) the meeting. Among them the International Society of Electrochemistry (ISE) formally supported the IWES 2021 workshop by sponsoring lecture awards to young speakers.

Organizing committee. The organizing committee included Cristina Tealdi (co-chair) and Sergio Brutti (co-chair) as well as Vito Di Noto, Piercarlo Mustarelli, Chiara Ferrara and Gioele Pagot.

Scientific committee. The scientific committee grouped together many internationally recognized scientists in the field of energy storage, namely: Vito Di Noto, Piercarlo Mustarelli, Catia Arbizzani, Benedetto Bozzini, Kristina Edstroem, Claudio Gerbaldi, Maria Assunta Navarra, Isabella Nicotera, Francesco Nobili, Michele Pavone, Vittorio Pellegrini, Eliana Quartarone, Riccardo Ruffo and Francesca Soavi.

Workshop program. From a scientific point of view, the IWES meeting focused on aprotic secondary battery research, in particular concerning lithium-ion, lithium and beyond Li-ion technologies from the fundamental research to the technological implementation in industrial processes. The program of the workshop was organized in three thematic days (24th of February on materials for Lithium Batteries; 25th of February on Materials for Novel Chemistry Beyond Li Batteries; 26th of February on Novel Methodologies for Cell Assembly, Testing and Recycling), 10 scientific sessions and included communications from 43 individual speakers (33 oral, 6 invited, 3 keynote and 1 thematic presentations) affiliated to 16 different Italian Universities, CNR, ENEA, 4 private companies and 8 European Universities.

The open ceremony was chaired by Piercarlo Mustarelli (President of the GISEL Association) and was honoured by introduction speeches given by Catia Arbizzani (Italian representative of the



International Society of Electrochemistry), Vito Di Noto (President of the Electrochemical Division of the Italian Society of Chemistry) and Kristina Edstrom (Coordinator of the EU Project Battery 2030+). In particular Catia Arbizzani illustrated the scientific commitment of ISE in the field of energy storage and batteries and presented the contribution given by ISE to the workshop.

The keynote presentations were given by Jurgen Janek (Justus-Liebig-Universitat Giessen; Solid-State Batteries - A Better Life without Liquids?), Lorenzo Stievano (Université de Montpellier; Alkali-earth metal-sulfur batteries: tackling the drawbacks of inefficient Ca and Mg systems) and Emma Kendrick (University of Birmingham; Sustainability of sodium and lithium-ion batteries).

The invited presentations were given by Giovanni Appetecchi (ENEA; Ionic liquid electrolytes for high-density lithium-ion battery systems operating at high voltages), Aleksandar Matic (Chalmers University; Stabilization of Li-metal anodes with highly concentrated electrolytes and ionic liquids), Wolfgang Zeier (Westfälische-Wilhelms-Universität Münster; On influence of bonding interactions and structural disorders in solid ionic conductors), Elena Arroyo-de-Dompablo (Universidad Complutense de Madrid; Recent progress on Calcium batteries: computational assessment of cathode materials), Claudio Lanciotti (MANZ, New challenges in battery production: an equipment manufacturer point of view) and Francesca Pagnanelli (Università di Roma La Sapienza; Innovative hydrometallurgical processes for the up-cycling of end of life Li-ion batteries).

Workshop attendance. A remarkable number of participants (195) has been formally registered on the online forms and the participation to the online event was wide (85 mean individual participants with a 130-maximum number of contemporary attendants).

Awards. Among all participants to the IWES 2021 meeting three oral presentations have been selected for a special honour. The award selection committee was formed by Catia Arbizzani (Italian representative of the International Society of Electrochemistry), Vito Di Noto (President of the Electrochemical Division of the Italian Society of Chemistry) and Piercarlo Mustarelli (President of the GISEL association). The three awards have been assigned to: Lorenzo Airoidi (University of Pavia) "Additive Manufacturing of Aqueous-Processed LiMn_2O_4 Thick Electrodes for High-Energy-Density Lithium-Ion Batteries"; Irene Facchinetti (University of Milano Bicocca) "Thermally Regenerable Redox-Flow Batteries; Antunes Staffolani (University of Camerino) "Fast Charging Anode for LIBs and NIBs Based on $\text{Fe}_3\text{O}_4/\text{rGO}$: Synthesis and Characterization". All Sponsors are acknowledged for their generosity.

As a last initiative related to the IWES 2021 meeting, the GISEL association opened a call for candidature to assign the first edition of the ELETTRA honour to an outstanding early-career Italian battery scientist. This award has been formally launched in the closing ceremony of the IWES 2021 meeting and the application call was published online (<http://www.giselnetwork.it/elettra2021>). Applicants were encouraged to send their candidature by email at the address postmaster@giselnetwork.it before 10th of March 2021. The award selection committee was formed by Catia Arbizzani (Italian representative of the International Society of Electrochemistry), Vito Di Noto (President of the Electrochemical Division of the Italian Society of Chemistry) and



Piercarlo Mustarelli (President of the GISEL Association) and, among all the received candidatures, selected Marco Agostini from the ENI company as first winner of the ELETTRA award.

Closing remarks. The IWES 2021 meeting has been a success in terms of participation and scientific quality. The GISEL Association is planning to replicate this meeting in 2022.