



Electrochemistry Northwest 2022 – 14th July 2022

University of Liverpool, Stephenson Institute for Renewable Energy (SIRE), Peach St., Liverpool, L69 7ZF

Talk Programme

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| 9.00 - 10.00 | Arrival / Registration - (SIRE foyer) | |
| Session 1 - Early Career Researchers - chaired by Professor Laurence Hardwick - (SIRE boardroom) | | |
| 10.00 - 11.00 | Nuria Garcia-Araez (Invited) | Fundamental developments of next generation of batteries and lithium production methods. |
| 11.00 - 11.20 | Cristiane Kalinke | Additive manufacturing electrochemical sensors for the diagnosis of diseases |
| 11.20 - 11.40 | Michael Mercer | Entropy profiling for Li and Na-ion batteries |
| 11.40 - 12.00 | Thomas Lau | Iridium on platinum coated support for oxygen evolution reactions in PEM water electrolyser |
| 12.00 - 12.20 | Abbie Trewin | Amorphous framework materials for energy application |
| 12.20 - 13.30 | Lunch and Posters - (SIRE boardroom and foyer) | |
| Session 2 - PhD Researchers - chaired by Dr Alex Neale - (SIRE boardroom) | | |
| 13.30 - 14.10 | Kathryn Toghill (Invited) | The challenge of electrocatalytic CO ₂ reduction |
| 14.10 - 14.30 | Julia Fernández Vidal | Investigating the presence of adsorbed species on Pt steps at low potentials |
| 14.30 - 14.50 | Alexandra Jones | Quinone voltammetry for redox-flow battery applications |
| 14.50 - 15.10 | Sonal Bajpai | Non-enzymatic sensing of creatinine for early detection of chronic kidney disease |
| 15.10 - 15.30 | Xiaohang Qiao | Single molecular junctions formation in deep eutectic solvents |
| 15.30 - 15.50 | Alexandra Michail | Systematic investigation of MgMn ₂ O ₄ oxyspinel as a cathode material for rechargeable Magnesium batteries: challenges and perspectives |
| 15.50 - 16.15 | Sponsor awards and closing remarks | |
| 16.15 - | Refreshments and networking - (SIRE boardroom and foyer) | |

The Electrochemistry Northwest 2022 event has been kindly sponsored by Alvatek, Biologic Science Instruments, Hiden Analytical, Metrohm and Cellerate, as well as the RSC Applied Materials Chemistry Group and the RSC Electrochemistry Interest Group.



Poster Session - (SIRE boardroom and foyer)

| Poster Number | Name | Title |
|---------------|------------------------------|--|
| 1 | Haoran Wang | Oxygen heteroatom enhanced sulfur-rich polymers synthesized by inverse vulcanization for high-performance lithium-sulfur batteries |
| 2 | Will Lima Da Silva | Hydrothermal synthesis of novel rutile $\text{Fe}^{2/3+}_{0.8}\text{Nb}_{1.5}\text{O}_{4.6}$ and its orthorhombic polymorph for application in Li-ion batteries |
| 3 | Veronica Del Angel Hernandez | Modelling of electrocatalysts for large scale applications. |
| 4 | Jui-Yu Pai | Observation of the lithium plating/stripping with microscopy cells in different carbonate electrolytes |
| 5 | Rory Powell | Atomic layer vs. sol-gel deposited coatings for long cycle-life Li-ion battery positive electrodes |
| 6 | Jacqueline Everitt | SHINERS for electrochemical and catalytic processes |
| 7 | Scott Gorman | CPI battery capability |
| 8 | Mark Potter | Decoupled electrochemical CO_2 reduction using redox mediators |
| 9 | Samuel Robertshaw | CO_2 -dimensional electrocatalysis: are MXenes the answer? |
| 10 | Paulo Roberto de Oliveira | Composite electrodes based on natural materials as a binder: electrochemical comparison and determination of ciprofloxacin in honey |
| 11 | Thukshan Samarakoon | Synthesis of TEMPO-functionalised ionic liquids as redox mediators for lithium-oxygen batteries |
| 12 | Alex Neale | <i>Operando</i> Kerr gated Raman spectroscopy to probe the high states of charge in graphite electrodes for Li-ion batteries |
| 13 | Sarah McKinney | Influence of synthetic route on the performance of the disordered rocksalt $\text{Li}_{1.2}\text{Ni}_{0.2}\text{Ti}_{0.6}\text{O}_2$ as a cathode material for Li-ion batteries |
| 14 | Lucy Walters | <i>Operando</i> surface enhanced infrared spectroscopic investigations of interfacial restructuring and oxygen electrochemistry in ionic liquid electrolytes for metal-air batteries |
| 15 | Enrico De Bonis | Electrochemical impedance monitoring of gold surface covalent grafting |
| 16 | Matthew Quarrell | Using phase change materials to regulate the temperature of a lithium battery |
| 17 | Ulzhalgas Karatayeva | Redox-active porous materials for CO_2 capture and conversion |
| 18 | Safa Ali Al Siyabi | Redox-active porous polymers: synthesis and applications |
| 19 | Jungwoo Lim | <i>In situ</i> and <i>ex situ</i> analyses for all-solid-state batteries |
| 20 | Dongni Zhao | Real-time manganese dissolution detection in Li-ion battery cathodes |
| 21 | Amr Ahmed Sadek | A molecular precursor approach triggering the growth of nano Chevrel-phase Mo_6S_8 for advanced aqueous energy storage systems |
| 22 | Kacper Polus | Functionalised carbon-based electrocatalysts |
| 23 | Ashley Willow | Effect of pouch cell design on energy density of sodium ion anode free batteries |