CAM-IES
Centre of Advanced Materials
for Integrated Energy Systems

INDUSTRY WORKSHOP

CAM-IES Industry Workshop
2pm to 5.30pm
Tuesday 7 May 2019

Rayleigh Seminar Room,
Floor 2,
Maxwell Centre,
JJ Thomson Ave,
Cambridge

Programme

1345 to 1400
Registration (refreshments available in seminar room all afternoon)

1400 to 1410
Introduction to CAM-IES by Clare Grey

1410 to 1430
Sam Stranks, Swift Solar
"High performance, lightweight perovskite photovoltaics"

Sam is a co-founder of Swift Solar, a startup developing lightweight solar panels that are more efficient and more affordable than conventional panels. The Swift Solar team includes leading solar technologists from Stanford, MIT, Cambridge, Oxford, University of Washington, and the National Renewable Energy Laboratory (NREL), with deep expertise in perovskite photovoltaic technology and scale-up. Swift's core technologies range from new solar cell architectures to specialised manufacturing techniques initially developed in the labs at Stanford and MIT.

1430 to 1450
Anna Motta, Talga
"2D materials for energy storage"

Talga Resources Ltd is an advanced materials technology company enabling stronger, lighter and more functional graphene and graphite enhanced products for clean technology applications in the global battery, coatings, construction and polymer composites markets. This talk will cover the company's commercial advantages owing to its vertically integrated high-grade Swedish graphite deposits and in-house process to product technology. Particular focus will be on our activities to develop a Li-ion battery materials' supply chain with a sustainable European source.

1450 to 1510
Fernando Castro, NPL
"Advanced nanoscale characterisation for nanoelectronics and solar cells"

Fernando is a Principal Scientist at NPL, leading the research on metrology for Electronic and Magnetic Materials and acting as Head of Materials Science and Engineering. His focus is on the development of advanced characterisation methods to understand the relationship between structure and function in new electronic and energy materials.

1510 to 1530
Bill Gillin, Chromosol
"Organic lasers on silicon chips: Transforming optical data transfer"

Datacentres, which currently consume about 3 % of the world's electricity generation and are responsible for around 2 % of all greenhouse gas emissions, rely on electrical connections short range data transfer, an energy intensive process which causes a bottleneck in the data transfer rate. Chromosol aims to further develop a laser materials derived from novel chemistry which can be deposited directly onto photonic integrated circuits (PICs), allowing the integration of lasers and providing distributed gain to overcome inherent losses in optical data transfer.

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1530 to 1550
Ainara Aguadero, Imperial College London
"Advanced ceramics for energy storage and conversion"

Ainara's research focuses on the study of physical and chemical properties in complex oxides, bulk surfaces and interfaces for application in solid state electrochemical devices such as batteries, memristors, fuel cells and electrolysers. Her current research activity is mainly focused on:

i) Use of surface analysis techniques to evaluate local chemical composition within materials and devices (i.e. batteries and fuel cells) and correlate this to their performance and degradation issues,
ii) Quantification of ion dynamics (^{6}Li, ^{18}O, D) in complex systems and development of topotactic redox materials with high oxygen storage capabilities

1550 to 1620
Chris Pickard, University of Cambridge
"Predicting the structures of interfaces from first principles"

Chris has used a first principles approach to the prediction of near-edge structure in electron energy loss speactra, nuclear magnetic resonance (NMR) chemical shifts, quadrupolar coupling constants, J-coupling constants, electron paramagnetic resonance (EPR) g-tensors and hyperfine parameters. Chis has extended the *ab initio* Random Structure Searching (AIRSS) software to search for compounds, defects, clusters, surfaces and interfaces, and to investigate the behaviour of materials under extreme compression.

1620 to 1645
Panel discussion with all speakers

1645 to 1730
Drinks reception, posters, networking

1730
Close of workshop

CAM-IES is an EPSRC* networking centre and is a partnership between the University of Cambridge, Newcastle University, Queen Mary University of London and University College London, as well as multiple industry partners. We aim to create a UK-based network of researchers interested in developing materials for integrated energy systems used for a range of technologies, including large-area electronics, solid-state batteries, coatings for energy materials, flow batteries, fuel cells, gas separation membranes, photovoltaics, and energy harvesters.

More information at
www.energy.cam.ac.uk/cam-ies/

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