

Anion-Exchange Membranes for Energy Generation Technologies

25 July 2013 - 26 July 2013

Workshop Report

The last decade has seen a significant increase in research activity looking at anion-exchange membrane in electrochemical energy technologies. Since 2003, the electrochemical energy materials team in the Department of Chemistry, University of Surrey has been world leading in the study of such membranes in solid alkaline fuel cells. To mark the 10th year of these efforts in Surrey, the University of Surrey hosted a two-day workshop to establish a consensus of the state-of-the-art regarding the use of anion-exchange membranes in various electrochemical devices such as fuel cells, redox flow batteries, electrolyzers and reverse electrodialysis cells.



Workshop themes

Seventeen international delegates from seven countries (Canada, China, Germany, Israel, Japan, Netherlands and USA) and a number of UK nationals attended the workshop, which comprised of introductory flash presentations followed by short and concise 20 minute talks by all delegates, along with poster sessions for participating

students. The sessions broadly covered the following topics: Membrane production, Ionic transport, Application in novel technologies, Current industrial applications and the use of Non-platinum electrocatalysts. The final session involved an open discussion on the targets and chief issues relating to each technological application for alkaline membranes. The discussion resulted in an amalgamation of multiple perspectives to give a clear understanding of the challenges faced.

Twenty two presentations were given, of which nineteen authors have provided permission for upload onto the internet for free access. **These presentations can be found on the [IAS website](#). Workshop brochure with abstracts is available [here](#).**

Outcomes

The workshop was deemed a great success, with considerable interest from many of the delegates to make it an annual event. There was strong emphasis on the importance of bringing so many of those involved within the alkaline membrane field together, within a small and targeted meeting, to allow frank and open discussions about the challenges and opportunities of this technology. This led to the production of road maps for the different energy generation technologies that utilise alkaline membranes along with industrial input on the key membrane parameters that need to be improved for successful implementation.

Surrey has benefited from the formation of new collaborations and the strengthening of existing links with both academia and industrial partners. Material exchange between different research parties was agreed, with Surrey's membranes being tested for more applications and detailed in-depth analysis of the materials using techniques currently unavailable in-house.

The lead organiser, Prof John Varcoe, has been invited to attend related international seminars being held on the subject later in 2013 and 2014 as a direct response to the publicity of this workshop. All delegates have been requested to submit an article to the "Journal of Membrane Science" (Elsevier) with work presented at the workshop. It has been agreed with the editor-in-chief to compose a *Virtual Special Issue* which brings together all the peer reviewed articles into an online edition with an introduction that puts the topic area into context.

Acknowledgements

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