

# IPID4all Senior Research Exchange with University of Victoria, Canada

## Feedback report

Ned Djilali, Professor & Canada Research Chair

*Host university*  
NEXT Energy

*Home research group + address*  
www.uvic.ca/estp

*Host research group + address*  
Division of Fuel Cells

*Home supervisor(s)*  
n/a

*Host supervisor*  
Dr. Alexander Dyck/Dr. Peter Wagner

*Exchange period* April 18-23, 2016

*Exchange topic* Fuel Cell Technology

### Introduction

The exchange allowed a visit of the laboratory facilities at NEXT Energy and discussions on collaborative work on modelling and characterization of fuel cells as well as identification of new topics of research related to bipolar membrane fuel cells and to energy systems analysis. During the visit I had meetings and discussions with several NEXT Energy researchers: Dr. Peter Wagner, Dr. Alexander Dyck, Dr. Corina Harms, Dr. Thomas Voigt, Dr. Maren Rastedt, and I also presented two research seminars, and I also met with Mr. Michael Golba, the Director of the Renewable Energy program, Oldenburg University.

### Research Undertaken

1. Discussion of the results obtained on water management in alkaline anion exchange membrane fuel cells by my Research Associate Dr. Jay Sui during his prior stay at NEXT Energy.
2. Exploration of research collaboration on Bipolar Membrane Fuel cells to characterize and investigate transport properties in the electrodes and in the membrane. We plan to identify a suitable exchange student to work in this area.
3. Discussion of the work in energy systems analysis undertaken at NEXT Energy and at IESVic and exploration of collaboration to blend the expertise experience on NEXT Energy (primarily storage focus) with that of IESVic (primarily Electric Vehicle integration focus).

Presentation of two seminars followed by discussion with various staff and students of NEXT Energy:

- Seminar 1: "Transport phenomena in fuel cell electrodes"
- Seminar 2: "Perspectives on the integration of renewable power generation and electric vehicles in smart grids"

The discussions with Mr. Michael Golba led to meeting with a Master's student Mr. Bruno Xavier. I agreed to host Mr. Xavier for six months in my laboratory for his research work.

### Personal Experience

The visit schedule was very well organized and coordinated by Dr. Wagner who acted as host, toured me around the laboratory facilities and introduced me to various researchers. Ms. Grit Schürmann responded promptly and efficiently to all my enquiries and provided all the required information for my stay in Oldenburg. My visit was professionally fruitful and very pleasant from a personal viewpoint.

### Conclusions

The visit was fruitful as it allowed me to become familiar with the significantly expanded and impressive experimental facilities available at NEXT Energy, to discuss and better understand the strategic directions of the organization, and to identify further collaborative projects and exchange opportunities.

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### Outlook

- Arrangements are in the process of being finalized for Mr. Bruno Xavier to spend a six month exchange stay (Sept. 2016 to Feb. 2017) in my laboratory and perform research on energy systems analysis toward his thesis.
- Further analysis of the data and model results on alkaline membrane fuel cells is planned with the objective of preparing and submitting a paper for publication by the end of 2016.

# DAAD



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