

## Press release

Presse-Information • Information de presse

13/2017  
25 October 2017

<http://www.efce.org>

### EFCE recognises scale-down of hydrogen production processes

The synthesis of hydrogen is of highest relevance for the future energy supply. Currently, hydrogen is being produced in large centralised plants. An efficient scaled-down process for the use of hydrogen as vehicle fuel is a tremendous challenge.

**Dr. Michael Shoham Patrascu** whose work focused on understanding and developing intensified scaled-down H<sub>2</sub> production processes in Pd-membrane reactors, through modeling, simulations

and experimental campaign, is the winner of the **2017 Excellence Award in Process Intensification** of the European Federation of Chemical Engineering (EFCE). His excellent PhD thesis "Scaled-down H<sub>2</sub> Production in Pd Membrane Reactors: Process Design and Experimental Investigations", completed at the Chemical Engineering Department, Technion - I.I.T., Haifa, Israel, under the supervision of Prof. Moshe Sheintuch, was recognized by the Jury for its excellent breadth and depth, scientific impact, innovation and industrial relevance.

Michael Shoham Patrascu earned his Bachelor and PhD degrees in Chemical Engineering from Technion - I.I.T., Haifa, Israel. Currently, he holds the position of Postdoctoral Associate at the Process Systems Engineering Laboratory, Massachusetts Institute of Technology - MIT, Cambridge, USA.

His work addresses various challenges, including thermodynamic and separation issues, through the design of a single integrated processing unit using highly selective *Pd-membranes*. This design is a proof of concept for on-board pure H<sub>2</sub> generators, with flexible fuel sources, and holds a great promise to eliminate the need for expensive H<sub>2</sub> transport and storage technologies for portable or stationary applications.



The Award jury stated: "He has demonstrated in a very impressive manner that his models deliver a significantly improved understanding of the Pd-membrane reactor with a suggestion of a novel mechanistic explanation. His modelling efforts allowed him to successfully build and operate two distinct experimental systems solving the key problems like hot spot formation. He was able to translate the simulation results into practical solutions in the experimental systems. These outstanding results have been converted to excellent publications. This dual command of modelling and experimentation capabilities makes his skillset quite unique and has generated scientific results which has been converted in practical designs."

His supervisor said: "Michael is a smart, creative, curious, industrious researcher. He showed a logical approach in his PhD work that combines theory and experiments. He is independent in his work and shows creative approaches in the design, construction and analysis of the experimental systems, in the choice of membrane and catalysts. He is also a good teacher and is very much in demand for recitation classes in various topics."

The award, which comprised of a €1,500 cash prize and certificate, was presented to Michael Shoham Patrascu at IPIC1/EPIC6/APSPIS3, which was held as a joint event of the 10<sup>th</sup> World Congress of Chemical Engineering (WCCE10) Barcelona, Spain, from 1 to 5 October 2017.

Ends

## Related links

EFCE media centre (<http://www.efce.info/Media+Centre.html>)

EFCE Excellence Award in Process Intensification  
(<http://efce.info/ExcellenceAwardProcessIntensification.html>)

10<sup>th</sup> World Congress of Chemical Engineering (<http://www.wcce10.org>)

**Photograph caption (L-R):** Professor Tom Van Gerven, Chairman of EFCE Working Party on Process Intensification; Professor Jean-Marc Le Lann, EFCE Scientific Vice-President; Dr. Michael Shoham Patrascu (photography by Alicia Garcia)

## Notes to media

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## About chemical engineers

Chemical, biochemical and process engineering is the application of science, maths and economics to the process of turning raw materials into everyday products. Professional chemical engineers design, construct and manage process operations all over the world. Oil and gas, pharmaceuticals, food and drink, synthetic fibres and clean drinking water are just some of the products where chemical engineering plays a central role.

## **About EFCE**

Founded in 1953, The European Federation of Chemical Engineering (EFCE) is a non-profit-making association, whose object is to promote co-operation in Europe between non-profit-making professional scientific and technical societies in 30 countries for the general advancement of chemical engineering and as a means of furthering the development of chemical engineering. See [www.efce.org](http://www.efce.org)