



# pig MONTHLY

process intensification group | [www.pig.ncl.ac.uk](http://www.pig.ncl.ac.uk) | [www.pinetwork.org](http://www.pinetwork.org)

## In This Issue

- PIG Conference Attendance
- Upcoming Event: CatSIG Conference
- PIG News
- Upcoming Conferences
- Recent Publications

## 1<sup>st</sup> European Forum on New Technologies

The European Federation of Chemical Engineering (EFCE) has recently introduced a new event series: European Forum on New Technologies. The inaugural event in this series took place in Paris on 7<sup>th</sup> September and focused on *Chemical Engineering and 3D Printing*. The five main topics discussed were: Conception of 3D Printers, End-Use of Additively Manufactured Objects, Manufactured Products in Pharmaceuticals, Formation of Materials and Implementation of 3D Printers into the 4.0 Factory. The programme can be accessed [here](#), whilst some of the presentations can be downloaded [here](#). Dr Jonathan McDonough attended this event in representation of the PIG. In summary, there were 90 attendees from 19 countries, with 34% of the participants being from industry.



ATLANTA, GEORGIA, USA, 9-12 SEPTEMBER

# MN F 2018

MICRO AND NANO FLOWS 2018

The latest iteration of the [Micro and Nano Flows](#) conference was hosted in the US for the first time from 9<sup>th</sup>—12<sup>th</sup> September at the Georgia Institute of Technology (Georgia Tech). The main topics covered were: Boiling and Condensation, Heat Exchangers and Reactors, Micro and Nano Flow Fundamentals, Heat Transfer Applications, Mixing and Design, Lab on Chip, Single Phase Heat Transfer, Nanofluids, Measuring/Sensing/Control, and Biomedical Flow Structures. The programme is available [here](#), whilst images taken during the first two days of the conference can be viewed [here](#) and [here](#). The PIG was represented at the meeting by Dr Richard Law and Dr Jonathan McDonough who presented the following talks:

**R. Law** | *Heat transfer enhancement by oscillatory baffled flows* | Session 1B

**J.R. McDonough** | *Micro-mixing performance of mesoscale oscillatory baffled reactors* | Session 1B

**J.R. McDonough** | *Flow regime mapping of small-scale gas-solid fluidized beds* | Session 2A





# Electrochem 2018

16-18 SEPTEMBER 2018, LANCASTER UNIVERSITY

The 25<sup>th</sup> annual conference, **Electrochem**, took place at Lancaster University from 16<sup>th</sup>—18<sup>th</sup> September. Olatunde Akinbuja and Dr Sharon Velasquez-Orta (pictured) were in attendance



from the PIG. Olatunde presented a poster at the conference titled: “*Algae based bioelectrochemical systems (BES)*”, highlighting preliminary data obtained from his experiment work as part of his PhD. This work investigated the role of *Synechocystis sp.* PCC 6803 as a biocatalyst in bioelectrochemical systems, and routes for their optimization and intensification. This work highlighted that *Synechocystis sp.* are able to switch their metabolic pathways in BES between electricity generation and bio-hydrogen production depending on the availability of oxygen. During this event, Olatunde was able to discuss with participants his project, gaining valuable guidance and suggestions.



## EU-ISMET 2018

The 4<sup>th</sup> *European Meeting of the International Society in Microbial Electrochemical Technologies (EU-ISMET)* was hosted in Newcastle University this year from 12<sup>th</sup>—14<sup>th</sup> September. This 3-day meeting highlighted the latest breakthroughs in microbial electrochemistry research and applications of bio electrochemical systems, covering topics from fundamentals to scale-up processes, bioremediation, resource recovery, and many more. Researchers had the opportunity to attend presentations from renowned scientists in the field and engage in interesting discussions. Dr Sharon Velasquez-Orta, Olatunde Akinbuja, James Hockaday and Ekaete Utuk from the PIG had the opportunity to attend this event and help as part of the organizing committee.

## Upcoming Conferences

- [International Conference on Micro Reaction Technology, IMRET](#) (21-24 Oct 2018, Karlsruhe, Germany)
- [2018 AIChE Annual Meeting](#) (28 Oct-2 Nov 2018, Pittsburgh, PA, US). Registration Deadline: 24<sup>th</sup> October 2018
- [10th Symposium on Continuous Flow Reactor Technology for Industrial Applications](#) (13-15 Nov 2018, Milano, Italy)
- [2019 AIChE Spring Meeting and 15th Global Congress on Process Safety](#) (31 Mar-4 April 2019, New Orleans, Louisiana, US). Abstract Deadline: 12<sup>th</sup> Nov 2018
- [4<sup>th</sup> Green and Sustainable Chemistry Conference](#) (5-8 May 2019, Dresden, Germany). Abstract Submission Deadline: 30<sup>th</sup> Nov 2018
- [International Symposium on Green Chemistry, ISGC2019](#) (13-17 May 2019, La Rochelle, France). Abstract Deadline: 15<sup>th</sup> April 2019
- [2<sup>nd</sup> International Process Intensification Conference \(IPIC<sup>2</sup>\)](#) (27-29 May 2019, Leuven, Belgium). Abstract Deadline: 15<sup>th</sup> Jan 2019
- [13th International Workshop on Polymer Reaction Engineering](#) (11-14 June 2019, Hamburg, Germany)
- [International Congress of Chemical Engineering](#) (19-21 June 2019, Santander, Spain)
- [12th European Congress of Chemical Engineering](#) (15-19 Sep 2019, Florence, Italy). Abstract Deadline: 15<sup>th</sup> January 2019
- [2019 AIChE Annual Meeting](#) (10-15 Nov 2019, Orlando, Florida, US)

### Upcoming Event at Newcastle University: **Novel Catalyst and Reactor Technologies: Fundamentals and Applications**

22<sup>nd</sup>—23<sup>rd</sup> November 2018

The IChemE Catalysis Special Interest Group (CatSIG) in collaboration with Newcastle University (*Prof Ian Metcalfe* and *Dr Fernando Russo-Abegao* of PIG) are organising a two half-days event focusing on novel catalytic materials and novel reaction technologies.

Research and developments showing innovative materials, reactor designs or applications are of great importance for continuous and step change deployment of chemical and environmental processes. The composition of the materials, the synthesis methods, and the micro- and macroscopic structure can play a critical role in the performance of the system. Novel strategies to design catalysts often combine control of all these aspects. New applications in the fields of hydrogen generation, fuel cells and biorenewables often require engineers and scientists to push the boundaries of catalyst and reaction designs in order to successfully develop new processes and scale these up for production plants operation. Process intensification and integration of catalyst and reactor design are a vital part of a successful strategy in modern-day catalysis applications.

This two half-days event will provide a unique platform for the UK catalysis community to share and learn the new developments in catalytic materials, reactors and applications. Two key notes speakers (*Prof Chris Hardacre* and *Prof Graham Hutchings*) and a series of 20 min oral presentation from experts in the field will give an overview of the state of the art in this area. A poster session will aim to disseminate latest scientific progress and stimulate discussion on new ideas and collaboration.

PhD students, postdoctoral researchers, early career academics, and industrial partners are particularly encouraged to attend this event. The event will be an excellent opportunity for chemical engineers, chemists and material scientists working on novel catalysis and reactor applications to discuss their work and network in an informal friendly setting.

Abstract submission and registration for this event can be made through IChemE [here](#).

## PIG News

- Congratulations to **Auwal Aliyu** who passed his PhD viva on 17<sup>th</sup> September. Auwal's thesis was titled: "*Catalytic cracking of algae for biofuel production*"
- Congratulations to **Muayad Alkarawi** who passed his PhD viva on 19<sup>th</sup> September. Muayad's thesis was titled: "*Development and intensification of a foam flotation system in harvesting microalgae for biofuel*"
- The PIG would like to welcome the following students:
  - **Prayoon Enmak** is a new PhD student in the group from Thailand who will be studying algae foam flotation with Prof Adam Harvey and Dr Jon Lee
  - **Jose Munoz** is a visiting PhD student from Spain (supervised by Dr Juan Solano), and he will be working with Prof Adam Harvey, Dr Anh Phan and Dr Richard Law
- Dr Takafumi Horie recently visited Dr Steven Wang and Dr Vladimir Zivkovic to discuss potential future collaborations
- **Yi Zhang** recently attended the **Dial-a-Molecule Enabling Technologies Summer School** hosted at Loughborough University from 30<sup>th</sup> July to 3<sup>rd</sup> August (picture below). This workshop was funded by the EPSRC to promote research aimed at a step change in our ability to deliver molecules more quickly and efficiently. The course included modules on: Design of Experiments (DoE), flow chemistry, 3D printing, process analytical technologies (PAT) and reactor technologies



## New Publications

- K.L. Goh, M. Makaremi, P. Pasbakhsh, R. De Silva, V. Zivkovic. Direct measurement of the elasticity and fracture properties of electrospun polyacrylonitrile/halloysite fibrous mesh in water. *Polymer Testing* (2018) DOI: [10.1016/j.polymertesting.2018.09.026](https://doi.org/10.1016/j.polymertesting.2018.09.026)
- M.F.M. Gunam Resul, A.M. López Fernández, A. Rehman, A.P. Harvey. Development of a selective, solvent-free epoxidation of limonene using hydrogen peroxide and a tungsten-based catalyst. *Reaction Chemistry & Engineering* (2018) DOI: [10.1039/C8RE00094H](https://doi.org/10.1039/C8RE00094H)

## Other Information

- Full contact details and research profiles for the PI group members can be found at the website: <http://pig.ncl.ac.uk>
- For enquires about collaborations or PhD study, see the website: <http://pig.ncl.ac.uk>
- If anyone would like to contribute any articles, or if anyone has any ideas regarding the newsletter please contact Jonathan McDonough: [jonathan.mcdonough@ncl.ac.uk](mailto:jonathan.mcdonough@ncl.ac.uk)