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## 16<sup>th</sup> UK Heat Transfer Conference

The UK Heat Transfer Conference (UKHTC) is organized under the aegis of the UK National Heat Transfer Committee every two years, and is the premier forum in the UK for the local and international heat transfer community to meet, disseminate ongoing work and discuss the latest advances in the heat transfer field. Dr Jonathan McDonough and Prof David Reay represented PIG at the latest UKHTC, which took place at Nottingham University from 8–10 September. Jonathan was invited to deliver one of the six plenary lectures, whilst David presented two presentations - an invited keynote and oral presentation; details below. The full programme is available [here](#).

- J.R. McDonough | Plenary Lecture | “*A perspective on the current and future roles of additive manufacturing in process engineering with an emphasis on heat transfer*”
- D.A. Reay | Keynote | “*Carbon capture from gas streams—heat transfer challenges and opportunities*”
- D.A. Reay | Oral Presentation | “*A metal additively manufactured (MAM) heat exchanger for electric motor thermal control on a high-altitude solar aircraft—experimental characterization*”



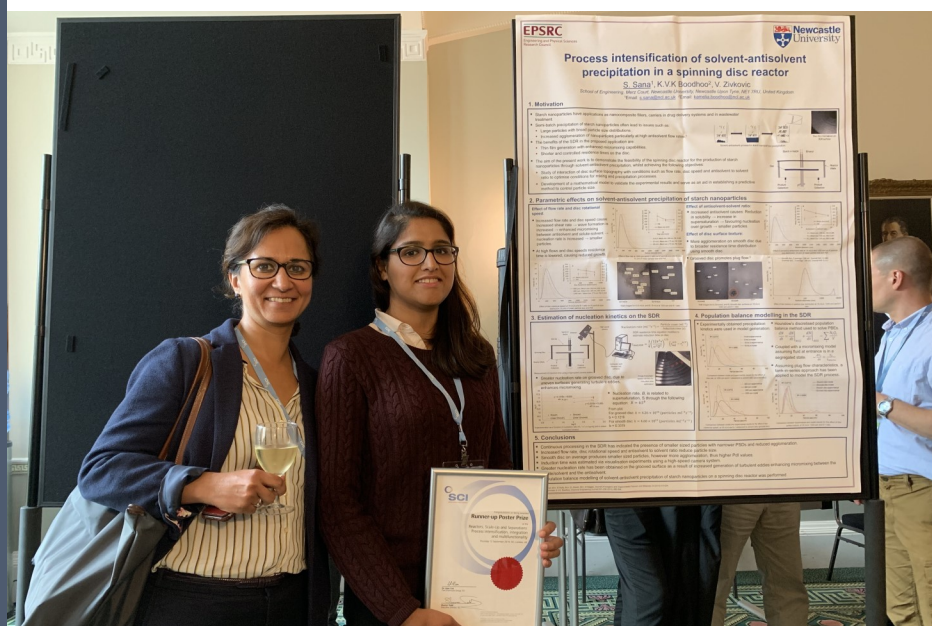
David talking about the heat transfer challenges of carbon capture from gas streams

## Upcoming Conferences

- **2019 AIChE Annual Meeting** (10-15 Nov 2019, Orlando, Florida, US)
- **Advances in Process Automation and Control** (18-20 Nov 2019, Manchester, UK)
- **2020 AIChE Spring Meeting** (29 March—1 April 2020, Houston, Texas). Abstract submission deadline: **Friday 22nd November 2019**
- **2nd International Conference on Sustainable Production and Consumption** (24-25 June 2020, Edinburgh, UK). Abstract deadline: **Friday 10th January 2020**
- **22nd Conference on Process Integration, Modelling and Optimization for Energy Saving and Pollution Reduction (PRES'20)** (17-21 August 2020, Xi'an, China). Abstract submission opening soon

## Reactors, Scale-up & Separations

The SCI's **Fine Chemicals Group** and IChemE's **Catalysis Special Interest Group** recently organized a one-day conference on 12th September primarily targeting PhD students and early career researchers: *Reactors, Scale-Up and Separations: Process intensification, integration and multifunctionality*. The event provided a mix of keynote, oral and poster presentations that showcased recent advances in multifunctional reactors across a range of industries from fine chemicals/pharma to energy/environmental technologies. The PIG was represented by Dr Kamelia Boodhoo and two PhD students: Sahr Sana and Akmal Rahim. Kamelia was invited to present a keynote: “*Nature-inspired engineering: Exploiting thin film flow processing for chemical and bioprocess intensification*”, whilst Sahr was awarded a prize for her poster: “*Process intensification of solvent-antisolvent precipitation in a spinning disc reactor*”. Further details about the event can be found [here](#).





## The 12th European Congress of Chemical Engineering, & the 5th European Congress of Applied Biotechnology

The European Congress of Chemical Engineering (ECCE) is a biannual event promoted by the European Federation of Chemical Engineering ([EFCE](#)) that is only awarded to Member Societies of EFCE. Following a successful bid, the 12th edition of ECCE was recently held in Florence, Italy, from 15-19 September. The European Congress of Applied Biotechnology (ECAB) has also been run in conjunction with ECCE since 2011, and is promoted by the European Society of Biochemical Engineering Science ([ESBES](#)). A breakdown of all of the events and themes is available [here](#).

The PIG was represented at ECCE/ECAB by Dr Chris O'Malley, Dr Mark Willis and three PhD students: Ibrahim Mohammed, Harry Laing and Paulius Rasiukas. The following presentations and posters associated with the group were delivered. Mark also chaired a session on Bioprocess Modelling and the full programme can be read [here](#).

- [Ibrahim Mohammed](#), [Jon Lee](#), [Adam Harvey](#) | ECAB | Bioenergy & Biofuels | Monday 16th September, 14:00-15:40 | *"Reactive coupling: A novel approach for glycerol free biodiesel production"*
- Joe Emerson, [Mark Willis](#), Jarka Glassey | ECAB | S/L & Membrane Separations | Tuesday 17th September, 08:30-09:30 | *"Multivariate data analysis in gene therapy process development"*
- [Paulius Rasiukas](#), [Chris O'Malley](#), [Mark Willis](#) | ECAB | Bioreactor Operations | Wednesday 18th September, 11:20-12:40 | *"A novel method for parameter identification of large-scale bio-chemical kinetic models"*
- [Harry Laing](#), [Chris O'Malley](#), [Mark Willis](#), Anthony Browne | Poster | P180: *"Investigation of control and on-line optimization opportunities of a wastewater treatment plant"*
- Judith Buchmaier, Christoph Brunner, [Anh Phan](#), [Adam Harvey](#), Krishna Rama, Bernd Nidetzky, Betting Muster | Poster | P356: *"Steps towards continuous cellulose hydrolysis via oscillatory flow bioreactors (OFBs)"*
- Victor Grisales Díaz, [Mark Willis](#) | Poster | P409: *"Economic optimization of ethanol production from corn stover"*



## PIG News

- In the latest [#LiveInTheLab](#) video (run by Dr Greg Mutch), Dr James Hendry and Dr Tolu Kolawole provide a short lab tour and overview of the pilot scale Rotating Packed Bed equipment used for intensifying CO<sub>2</sub> capture using liquid amines
- Dr Jonathan McDonough and Dr Richard Law are the Guest Editors for a Special Issue of Thermal Science and Engineering Progress ([TSEP](#)), dedicated to the proceedings of the 16th UK Heat Transfer Conference
- Dr Kamelia Boodhoo was recently appointed to the Editorial Advisory Board of [Chemical Engineering and Processing: Process Intensification](#)
- Congratulations to Dr Chris O'Malley, who has been appointed as the new Undergraduate Degree Programme Director in Chemical Engineering
- Congratulations to Phuet Prasertcharoensuk who recently passed his PhD viva without corrections on 17th September. His thesis was titled: "[Gasification of waste for hydrogen production](#)"
- Following their participation in an IChemE event last year, a group of Stage 4 undergraduate students from Newcastle recently had their [work](#) published in the IChemE Loss Prevention Bulletin (Tom Kavanagh, Brad Sparks, Manthan Patel, Deema Khunda, Eloise Flores). The students were inspired to enter the competition due to their interest in process intensification gained through the PI undergraduate module. Other entries into the SIESO Medal competition can be found [here](#).
- Congratulations to Akmal Rahim who competed in the Great North Run this year, finishing in a time of 1:45:44.
- Dr Jonathan McDonough recently presented an invited seminar at Imperial College London on 22nd October. The title of the talk was: "[A perspective on the current and future roles of additive manufacturing in process engineering](#)". Jonathan also had the opportunity to meet members of the Alan Turing Institute to discuss ideas for exploiting 3D printing for the fabrication of CFD-optimized reactors.
- The PIG would like to officially welcome the following new PhD students:
  - [Hannah Kargbo](#), working with Dr Anh Phan
  - [Koren Murphy](#), working with Dr Chris O'Malley and Dr Mark Willis
  - [Ryo Toyoda](#), working with Dr Fernando Russo Abegao
  - [Chioma Udeozor](#), working with Dr Fernando Russo Abegao
  - [Kate Wildish-Jones](#), working with Dr Fernando Russo Abegao and Prof Adam Harvey

## 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)



## Travel Photos & Selfies



Anh (left) and Adam (right) at a meeting with the Austrian Technology Institute (Gleisdorf, Austria)



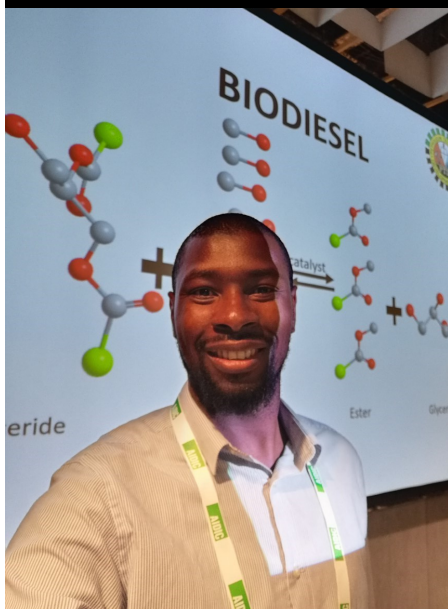
Kamelia, Akmal and Sahr in London for the SCI event



Chris, Koren and Mark seeing the sights in Brussels prior to the GSK Biologics kick-off meeting



David and Jonathan at the UKHTC dinner (Nottingham University)



Ibrahim presenting at ECAB



Harry, Paulius, Chris and Mark (and Joe) in Florence for the European Congress on Chemical Engineering



## *Pilot-Scale Rotating Packed Bed for CO<sub>2</sub> Capture*



Jon Lee's newly installed pilot-scale Rotating Packed Bed (RPB) for CO<sub>2</sub> capture in a Sheffield University facility

## *Other Announcements*

- Dr Greg Mutch from the **MatCoRE** group is Co-Chair of the 17th Network Young Membranes Meeting that may be of interest to some PIG members. More information can be found [here](#).
- The application process is currently open for a travel scholarship for PhD students to attend the **National Biodiesel Conference & Expo** from 20-23 Jan 2020 in Tampa, Florida. The scholarship covers the conference fee (\$1200) and provides an additional bursary of \$600 to support travel. The application deadline is 21st Nov 2019, and to apply, students must first join the **Next Generation Scientists for Biodiesel** (which is free). Several past PhD students from PIG have attended and enjoyed this event.
- CO2Chem is hosting a Winter School for PhD students and early career researchers in January 2020. More details about the event and booking information can be found [here](#).

## New Publications

Chen Q., Yang H., Li R., Xiu W.Z., Han R., Sun Q.C., [Zivkovic V.](#) *Compaction and dilatancy of irregular particles avalanche flow in rotating drum operated in slumping regime*. Powder Technology (2019)

Díaz V.H.G., [Willis M.J.](#) *On the economic optimisation of ethanol production using corn stover feedstock: A new kinetic model, a green recovery system and a de-acetylation step*. Energy Conversion and Management **202** (2019) 1112200

Okoro V., Azimov U., Munoz J., Hernandez H.H., [Phan A.N.](#) *Microalgae cultivation and harvesting: Growth performance and use of flocculants—A review*. Renewable and Sustainable Energy Reviews **115** (2019) 109364

[Saleem F.](#), [Harris J.](#), [Zhang K.](#), [Harvey A.](#) *Non-thermal plasma as a promising route for the removal of tar from the product gas of biomass gasification—A critical review*. Chemical Engineering Journal (2019) 122761

Tian Y., [Zhang J.](#), Chen L., Geng Y., Wang Z. *Single wearable accelerometer-based human activity recognition via kernel discriminant analysis and QPSO-KELM classifier*. IEEE Access **7** (2019) 109216-109227

Vilardi G., Stoller M., Di Palma L., [Boodhoo K.](#), Verdone N. *Metallic iron nanoparticles intensified production by Spinning Disk Reactor: optimization and fluid dynamics modelling*. Chemical Engineering and Processing: Process Intensification (2019) 107683

[Zhu C.](#), [Zhang J.](#) *Developing Soft Sensors for Polymer Melt Index in an Industrial Polymerization Process using Deep Belief Networks*. International Journal of Automation and Computing (2019)