

CASE STUDY

Investigating catalyst behaviour under CO hydrogenation reaction conditions



Eleni Liakakou from the Aristotle University of Thessaloniki in Greece visited Aston University through the BRISK initiative.

Her travel and living costs were paid by BRISK which is funded by the European Commission Seventh Framework Programme (Capacities).

In the summary below she describes her experience of BRISK, including the scope of the experiments she conducted and the benefits she gained both academically and personally.

I am a PhD student at the Chemical Engineering Department of the Aristotle University of Thessaloniki, Greece and my research focuses on the development, testing and characterization of novel catalytic materials for the thermochemical conversion of biosynthesis gas to higher alcohols. The BRISK initiative provided me with the ideal opportunity to access advanced *in-situ* characterization techniques available at the Bioenergy Research Group (BERG) within the European Bioenergy Research Institute (EBRI) of Aston University based in Birmingham, UK.

The BRISK application process was very simple. All the required information is readily available on the website (www.briskeu.com) and the BRISK partners I contacted were eager to respond to my requests. Their swift response to my application came within two months and all experimental planning was developed with the advice of EBRI's laboratory staff. They sorted out my flight and accommodation arrangements and made me feel very welcome.

Aston University is right in the centre of Birmingham and the accommodation that was booked for me situated in the university campus allowed me to enjoy the tranquil surroundings of

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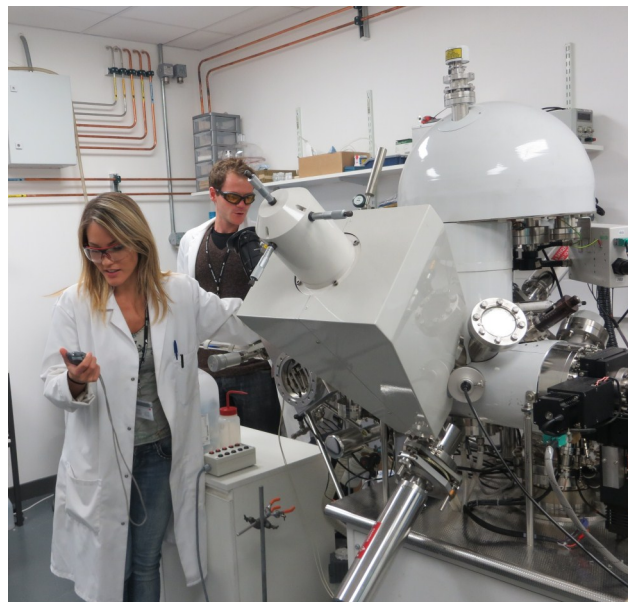


Figure 1: Running an *in-situ* syngas XPS experiment.

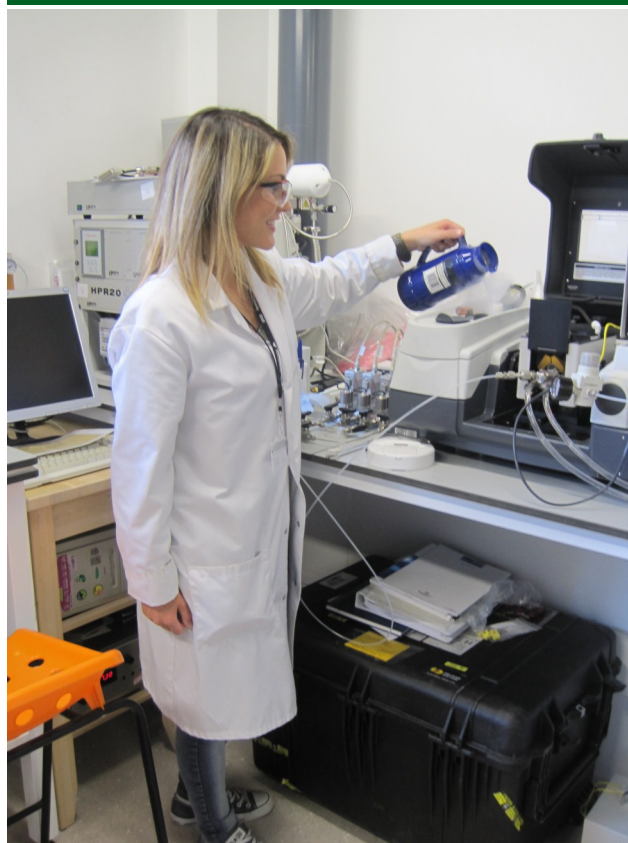


Figure 2: *In-situ* high pressure DRIFTS experiment.

CASE STUDY

Investigating catalyst behaviour ...continued

both the university lake and the gardens at the nearby science, technology and learning centre 'Millennium Point'.

During my three week visit, I had full access to the laboratories and all the necessary equipment. The EBRI group members were more than willing to help and guide me, in spite of the tight time schedule. The scope of the experiments was to investigate the catalyst's behaviour under CO hydrogenation reaction conditions and specifically to determine the phase change of the materials and define the reaction intermediates, using some advanced high pressure equipment. We managed to get some rewarding results and even after I had left Aston, the EBRI team even finished the pending analysis that we didn't manage to terminate during my stay.

The BRISK Transnational Access was a valuable experience both at an academic and personal level. I highly recommend it to any PhD student and young researcher as it is a unique opportunity to exchange ideas and broaden one's experiences in scientific training.

Acknowledgement

I would like to thank the EBRI team and particularly Dr Mark Isaacs, Dr Christopher Parlett and Professor Adam Lee.

Professor Lee can be contacted at a.f.lee@aston.ac.uk or +44 121 204 4036

www.briskeu.com

EBRI

European Bioenergy Research Institute

Contact

Tony Bridgwater
Aston University
E: a.v.bridgwater@aston.ac.uk
W: www.aston.ac.uk/ebri



Figure 3: Processing the *in-situ* syngas high pressure XRD data.



Figure 4: EBRI team members – Dr James Bennett (left) and Dr Mark Isaacs (right).