

CASE STUDY

‘My visit to EBRI at Aston University, UK’



Jens Peters of IMDEA Energy Institute reports back on his recent experiences of Transnational Access through BRISK.

I am a member of the system analysis group at the IMDEA Energy Research Institute in Madrid, Spain. Our group specialises in environmental assessments, exergy analyses and other issues related to system analysis, especially for bioenergy processes.

Normally, we base our analyses on process simulation, using specific software like Epsilon or AspenPlus. For this purpose I developed a kinetic reaction model for pyrolysis of lignocellulosic biomass in Aspen Plus which estimates pyrolysis yields and product composition for lignocellulosic feedstocks based on their atomic and biochemical composition. Verification with existing literature data showed good correlation, but publications that provide all the necessary data for a detailed verification are scarce.

At our institute, we do not have the required equipment for conducting our own demonstrative pyrolysis experiments. In light of this, my group leader forwarded me an email about the BRISK project that offers access to experimental installations all over Europe. After looking on the [BRISK](#) website home page, I decided to apply for a stay at the Bioenergy Research Group (BERG) within the European Bioenergy Research Institute



Figure 1: Aston University's 1kg h⁻¹ continuous fast pyrolysis unit.

(EBRI) at Aston University in the UK, since they seemed to have the type of equipment that best fitted my needs.

I contacted the host institution and together we figured out the experimental procedure and the best dates for the visit, and then submitted the application form. The process was simple and uncomplicated, and it took about two months to get the final approval. The organisation during the stay was very good, and especially the new visitor flats situated on the Aston University campus are a real luxury - spacious, comfortable and fully equipped at just a two minute walking distance to the new EBRI building. It's so close that even if it rains you do not need an umbrella!

From the first day, I had full access to everything and the group members helped me wherever they could, especially Dr Scott Banks of EBRI (see Figure 3), who dedicated the two weeks almost entirely to my pyrolysis experiments. In spite of the tight time schedule and a minor problem with the

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biomass feeder we managed to successfully terminate all the four runs with the 1kg h^{-1} continuous fluidised bed fast pyrolysis rig (see Figures 1 and 2). After I had left Aston, the EBRI team even finished the pending analysis that we didn't manage to terminate during my stay. Since within our IMDEA group we almost exclusively use computer simulations, the practical aspect given to my work through my BRISK visit to Aston was extremely valuable.

For me, it was especially interesting to work with a real pyrolysis installation and to experience all the difficulties and drawbacks that experiments on a laboratory rig can bring along. It was definitely a very good and enriching experience, both academically and personally. And you will learn some real West Midlands English!

I would recommend the BRISK project to everybody who works on bioenergy. Even if one has all the required equipment at home, it is always a fruitful experience to work with other

groups, exchange experience and get to know new and interesting people.

Acknowledgement

I would like to thank the EBRI team, particularly Dr Scott Banks, Dr Daniel Nowakowski, Surila Darbar and Professor Tony Bridgwater.

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Figure 2: 1kg h^{-1} continuous bubbling fluidised bed fast pyrolysis reactor.



Figure 3: EBRI team members - Dr Scott Banks (left) and Surila Darbar (right).