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**CA**lytic membrane **RE**actors  
based on  
**New mA**terials for C1-C4 valorization

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CARENA is a large-scale integrating project funded by the EC

**Interview with Elizabeth Shotton from  
Diamond Ltd., UK.**



*I studied chemistry at university, firstly at the University of St Andrews followed by a PhD in solid state organic chemistry at University College London. Since graduating, I have worked at the UK synchrotrons, firstly at Daresbury, now at Diamond. My job isn't as research-focused as other participants in the CARENA project; I am responsible for managing all aspects of usage of our synchrotron beamlines by industrial partners such as Johnson Matthey, GlaxoSmithKline, Rolls-Royce and many others.*

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**What made you opt for a career as a researcher? How would you define your job?**

I am Head of Industrial Liaison at Diamond and my job is very much about facilitating research and ensuring that our industrial users do the best experiments that they can during their short time at Diamond. Johnson Matthey is one of our key clients at Diamond and they brought us into the CARENA project – this was the first time that the Industrial Liaison team had participated directly in an EU project.

**We'd like to catch a glimpse of your daily activities. What is an average day (or week) for you?**

As we are a small team, my role encompasses a range of activities from business development through to data collection and analysis. This means that I am discussing new projects with new clients, working on marketing material for the website, planning experiments and seeking out new opportunities. I also have to keep up-to-date with developments at other synchrotrons so that provides the opportunity for travel including to the US, Canada and Japan. No day is ever the same as the last which is part of the attraction of working somewhere like Diamond.





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*The CARENA project has been designed with a strong emphasis on multidisciplinary approach. What progress can be expected if chemists work in closer relation with other disciplines?*

The synchrotron environment is a multidisciplinary one and we see daily advantages by working with colleagues from other backgrounds. Here chemists, physicists, metallurgists, biologists, earth scientists, archaeologists to name but a few work together regularly. By bringing a range of experiences to bear on a scientific problem, creative solutions can often be found and new advances made.



*CARENA brings together Research labs and industry. How do you view research-industry collaboration within the framework of the project?*

While we were brought into the project by Johnson Matthey, our interactions within the project have mainly been with other research labs. However, as we mainly work with industrial partners in our primary roles here at Diamond, the opportunity to do some more fundamental research leading to publications has been a good thing for us. Industrial experiments often explore complex multi-component systems, so working on model and novel membrane materials gives us an excellent opportunity to develop techniques and trial complex experimental conditions for example *in situ* catalysis; performing complex chemistry at high temperature and in the presence of gases while simultaneously recording structural and chemical information from X-ray measurements.





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*What is the added-value of an EU project such as CARENA compared with other partnerships on the same topic you may be involved in?*

Most of the scientific projects that the team and I are involved in only have one partner; the consortium approach here allows for a much wider exchange of view and ideas which has been very interesting for us.



*Last but not least, let's zoom out on broader themes. Sustainable development and environment issues are key concerns nowadays. How does membrane chemistry fit in the pattern? Would you say chemistry is going through major changes?*

Changes in legislation along with a drive to reduce costs and energy use have made sustainable chemistry a key priority for many industrial areas. Innovative approaches, such as the use of membrane catalysts, are needed to tackle these problems. In our experience, multidisciplinary teams with a range of different expertise and interests are able to make a positive contribution to these challenging projects.

*Thank you Elizabeth for answering my questions, and all the best for CARENA and the other projects you are involved in.*

*Interviewed by Laurence Bosch*

## CARENA in brief

Starting date: 1st June 2011  
Project duration: 2011 – 2015  
Number of partners: 19  
Coordinator: Arend de Groot, ECN, the Netherlands  
Programme: FP7-NMP-2010-LARGE- 4  
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