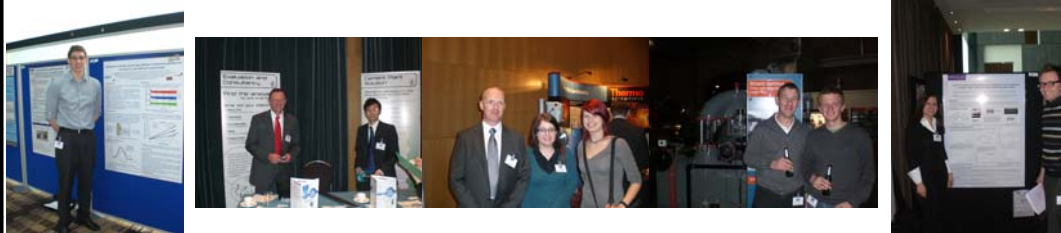


APACT 10



The APACT 10 conference took place in Manchester at the Hilton Deansgate Hotel on 28-30 April 2010.

The feedback received has been excellent. A few quotes from the delegates:

*"Great quality speakers and presentations and highly interesting subjects"
"I was impressed by the conference and its standard"*

A total of 32 presentations were given over the three days of the conference. There were 3 plenary and 8 keynote talks. 100 delegates attended from countries including Austria, Belgium, Denmark, Germany, Israel, Japan, Sweden, Switzerland, The Netherlands, UK and USA.

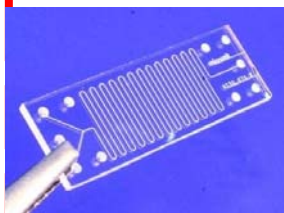
18 vendor companies exhibited and 18 posters were presented. Poster prizes were awarded to David Sawtell, University of Manchester (1st prize) for his poster entitled "Chemometric approaches to the design of functional thin films by PECVD" and Peter Hamilton, University of Strathclyde for his poster entitled "Detection of attrition in moving cellobiose octaacetate particles in real-time by near-infrared spectroscopy". Special thanks to Clairet Scientific for sponsoring this prize.

Reiner Luttmann, Hamburg University won 'Best Lecture Prize' for his talk entitled "Applications in design of experiments for optical production of recombinant proteins with *Pichia pastoris*". Special thanks to CAMO Software for sponsoring this prize.



SERGEY MOZHAROV TRAVELS TO THE UNIVERSITY OF HULL & THE UNIVERSITY OF WASHINGTON

In March 2010 Sergey Mozharov, a final year PhD student at CPACT Strathclyde, completed a series of research visits to England and USA, and would like to share his impression and the main results of his trips. Sergey's research project is centred on the development of photonics systems to advance real-time monitoring of chemical processes by Raman spectroscopy. His current activities involve the design, construction and application of compact and efficient Raman analysers for micro-reactors. As it became a new research direction at the Department, it was appropriate for Sergey to search for opportunities to engage into collaboration with the leading professionals in the fields of microfluidics and photonics to continue exploring the potential and limitations of Raman spectrometry for micro-reactor technology.



His first destination was Paul Watts' laboratory at the University of Hull where he spent 5 weeks. Being a CPACT member, Paul has been leading outstanding research in micro-reactor chemistry for many years. Collaboration with his group was a natural step in Sergey's research and a bilaterally beneficial endeavour. The main result of that 5-week project was development of a novel method to optimise the flow rate of a chemical reaction and study its

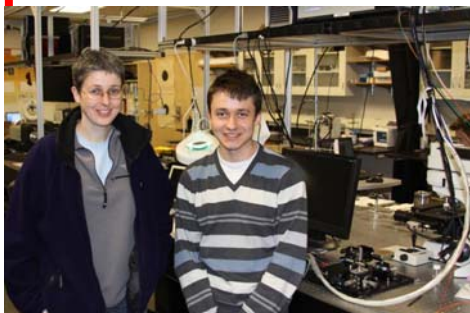


Sergey with Paul Watts and his team at Hull

kinetics in a micro-reactor. It is based on flow rate manipulation and real-time non-invasive measurements by Raman spectroscopy. The new method allows the study of chemical reactions with significantly reduced consumption of chemicals and more efficient use of equipment, demonstrating an opportunity for greener and faster process development.

Sergey is pleased with the results, and notes that it would not be possible to succeed within such a short period of time without the coordinated work of all people involved, including David Littlejohn, Alison Nordon and John Girkin from the University of Strathclyde, Charlotte Wiles and Paul Watts from the University of Hull, and Paul Dallin from Claret Scientific who kindly agreed to provide the latest Raman spectrometer for the period of study.

The work completed in Hull revealed a number of technical challenges that must be addressed in order to enhance the potential and applicability of the developed optimisation method. The facilities and experience of our colleagues in The University of Washington (Seattle, USA), made it possible to undertake the next step of his research in their laboratory. Brian Marquardt, head of the Applied Optical Sensing Laboratory in Seattle, is a leading world expert in the development and applications of optical sensing technologies to a wide range of analytical problems that challenge the industrial world. His laboratory is very well equipped with optical, spectroscopic, microfluidic, engineering and process control instruments.



Alison Nordon and Sergey preparing their Raman probe for the new work (Seattle).

Alison Nordon visited Brian's lab in February while Sergey was there. Together they discussed the current work as well as future opportunities. Sergey comments on his trip: "We studied mixing phenomena on a micro-scale and explored the ways to further improve the quality of Raman spectra collected from the micro-channels and capillaries. I found this trip interesting and highly useful for my studies. I have achieved

a much better understanding of the processes occurring in the micro-channels and assembled a system with improved sensitivity and reduced background on the collected Raman spectra owing to a specially designed optical interface between the probe and the capillary. The separation of the measurement site from the microreactor was demonstrated as a solution to all the technical difficulties that I encountered in Hull. The combined results of these two projects can lead to development of a universal Raman system for real-time analysis for microfluidics. These trips were an incredible experience in my life. I have mastered new skills and obtained new knowledge in optics, microfluidics and data processing, I met clever and interesting people, learnt how to work in a team and how research is organised and managed in different parts of the world. These visits increased my motivation and fascination for scientific research and developed the understanding of how people collaborate on projects. I would like to thank all my



Sergey, Brian Marquardt and his team (Seattle)

colleagues for continuous help and guidance. I am also grateful to Mac Robertson scheme, CPACT, RSC, University of Strathclyde, University of Hull, and University of Washington for funding my trips".