

Centre for Advanced Structural Ceramics

UK centre for structural ceramics research and teaching, which aims to be world-leading and to develop links and collaborations with industrial and academic groups world-wide

MARCH 2015

7TH NEWSLETTER

CASC continues its activities supported by the Industrial Consortium formed with Morgan Advanced Materials, Rolls-Royce, DSTL, Asahi Glass, Kerneos and Reaction Engines. More than 30 students and postdoctoral researchers working on projects funded by a variety of sources including EPSRC, EU and industry.



CASC INDUSTRY DAY



FIFTH CASC INDUSTRY DAY was held on 23rd January 2015 at Imperial College with attendees from industry and university (Morgan Advanced Materials, Rolls-Royce, ADML, CoorsTek, John Crane, Element Six, Kerneos, Queen Mary University, MoD). There were presentations and research posters from industrial and academic members.

The industry day was followed by the Steering Group meeting in the afternoon. The next CASC industry day will be on 22nd January 2016. For more information about the benefits of membership of the CASC-Industry Consortium, please contact Eduardo Saiz (e.saiz@imperial.ac.uk) or Amutha Devaraj (adevaraj@imperial.ac.uk).



IMPERIAL FESTIVAL 2014



Record numbers of visitors joined staff and students for the annual celebration of the best science and arts on offer from Imperial College London. May 8-10, more than 12,000 visitors descended on Imperial's South Kensington campus to enjoy the interactive, workshops, tours, talks and performances on offer at the 2014 Imperial Festival.

CASC research activities were showcased in the festival. A flyer explaining the scope and aim of the CASC industrial consortium was published for public awareness.

CASC EQUIPMENT - NEW ARRIVALS

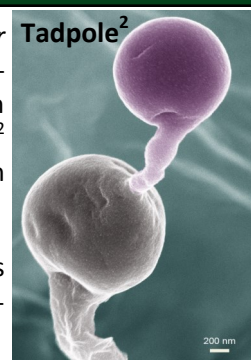
Rapid Prototype (CNC) milling is dramatically transforming the design and manufacturing. This milling machine has answered the call for a cost-effective, high precision and compact solution. Used to create realistic models, functional prototypes and moulds and is compatible with a wide range of materials. It produces highly accurate parts including those for complex snap-fits from an extensive range of non-proprietary materials including Acetal, ABS, chemical woods, acrylic, plaster, nylon, styrene and many medical grade materials including PEEK. It's main use in CASC will be for green machining.



An Oxygen-nitrogen-hydrogen Elemental Mass Gas Analyser (EMGA series) has been placed in order and will be installed in the CASC in 2015. This also includes Carbon-sulphur Elemental Mass Induction Analyser (EMIA series) and

PRIZES AND MEDIA MENTIONS

Dr Victoria G Rocha (Marie Curie Fellow) won prizes for the *best oral presentation* and *best poster presentation* in the 5th Postdoctoral Symposium in the Department of Materials sponsored by GRAPHEA and Nature Materials, held 18 Feb. 2015. Her talk on "Engineering 3D architectures from Chemically Modified Graphene" was awarded with the first prize. Her picture titled Tadpole² (Graphene special feature) was awarded BEST PHOTO in the Art in Material Science competition in the same symposium, sponsored by ZEISS.



Claudio Ferraro won a picture competition organised by the journal "Materials Today". The picture of CVD of SiC spheres during the sintering at high temperatures of SiC scaffolds has been published on the cover of the March 2015 issue.

Dr Nasrin Al Nasiri has won the gold medal and a £3000 prize in the engineering section at this year's SET for Britain. Set for Britain is an annual competition for young researchers run by the Parliamentary and Scientific committee in collaboration with the learned societies. The Physiological Society, the Royal Academy of Engineering, the Royal Society of Chemistry, the society of Biology, The council of Mathematical Sciences, the clay Mathematics Institute and the Institute of Physics are lending their support to this event.



SIR RICHARD BROOK PRIZE—BEST CERAMICS PHD THESIS

Sir Richard Brook Prize for 2014 best ceramics PhD thesis was won by **Dr James Thomas Bennett**, University of Leeds. This was for his research on *Development of bismuth ferrite derived piezoelectric ceramics for high temperature applications*, supervised by Professor Andrew Bells. It is sponsored by Morgan Advanced Materials and it covers a certificate, plaque and £1000 cheque and this will be awarded to James in 1 DRAC meeting, April 2015 at Imperial College London. The next year prize will be awarded in January 2015. For additional information, please contact Eduardo Saiz (e.saiz@imperial.ac.uk) or Amutha Devaraj (adevaraj@imperial.ac.uk)



SUMMER SCHOOL 2014



CASC Summer School took place from 17 to 19 Sept. 2014. It consisted of (i) introductory lectures on forming, sintering and mechanical properties, (ii) laboratory experiments on powder characterization, colloidal suspensions and mechanical properties, iii) master classes by experts. The attendees came mostly from industry and/or government labs. The 6th edition will take place from 16 to 18 Sep. 2015.



Further information: www.imperial.ac.uk/casc

CASC NEW APPOINTEES

Dr Ayan Bhowmik joined the Centre for Advanced Structural Ceramics, Imperial College as a Research Associate in May 2014.

His present research deals with investigating the micro-mechanisms of deformation/failure in various complex intermetallics and ceramic materials for example boron carbide, for next generation light-weight ballistic armours. Prior to this, he had completed his PhD (Materials Science and Metallurgy) and a year of post-doc at University of Cambridge, where his research focussed on exploring and developing novel material systems for jet engines.

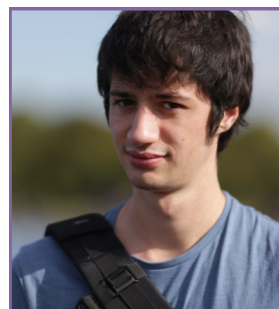


Dr Laura Larrimbe is a research associate at the Centre for Advanced Structural Ceramics (CASC) at Imperial College, London.

She received her undergraduate degree in Chemistry in 2009 and completed her PhD in 2014 at the University of Navarra (San Sebastián, Spain) focused on the development of ultrafiltration and nanofiltration ceramic membranes for wastewater treatment. She joined CASC in December 2014 where her main research lines are ultrahigh temperature ceramic components for temperature protection systems.

Ezra Feilden-Irving joined the CASC in 2014 as a PhD student, having completed a BEng and an MSc in Advanced Materials at Imperial College London. He is a CASC –Industry Consortium funded PhD student.

His project is based around additive manufacturing (3D Printing) of functionally graded ceramics, with an emphasis on aerospace materials. Progress so far has been made by tailoring meso- and micro-structure together to achieve novel properties. His interests and motivation lie in space engineering and all of the challenges and triumphs it brings.



OUT AND ABOUT

CASC researchers have presented their work at a number of international conferences.

- Electronic Materials and Applications 2014, Orlando, FL, USA, 23 January, 2014
- Workshop in Cambridge on Bio inspired Technologies Towards H2020 in January 2014. It was an inter-collaborative meeting between England and Switzerland
- Biobone workshop on Cell Material Interactions, ARI, Davos, Switzerland, 27-30 April 2014
- Materials Science & Technology Conference, Pittsburgh, Pennsylvania, USA, 10 October 2014
- The sixth International Workshop on Advanced Ceramics (IWAC-06) Erlangen, Germany, 28-30 September 2014.
- Graphene-2014, May 06-09, 2014 Toulouse, France
- Biobone workshop on Surface Characterisation of Biomaterials, UMONS, 20-21 October 2014

Further information: www.imperial.ac.uk/casc, adevaraj@imperial.ac.uk or +44 20 7594 2053