

EPSRCEngineering and Physical Sciences
Research Council

Materials Systems for Extreme Environments, XMat

The second newsletter updating the ceramics community on news and progress of an EPSRC programme grant on Ceramics and Ceramic Composites


**UNIVERSITY OF
BIRMINGHAM**

**Imperial College
London**

**Queen Mary
University of London**

People - XMat



JON BINNER, PI of the XMat project is the Professor of Ceramic Science & Engineering and Deputy Head of the Engineering and Physical Sciences College at the University of Birmingham, UK.



KEELEY AUSTIN joined the XMat project as an Administrator replacing Christina Kokorosko. She has been working in as a research administrator for the XMat project since April 2014. She has previously worked for the University of Birmingham in various administrative roles within Student Records and Learning. She has also worked in an administrative capacity at BDO financial and as a coordinator within Learning and Development at Ernst and Young.



DENIS HORLAIT joined XMat and the Centre for Nuclear Engineering at the Department of Materials as a post-

doctoral research associate in April 2014. His work at Imperial College will focus on MAX phase and their application as protective materials in accidental conditions for nuclear fuel cladding. Prior to this he has done his PhD and a post-doc in Commissariat a l'Energie Atomique centre of Marcoule working respectively on oxide ceramic dissolution and uranium-amerium mixed-oxides.



ANDREA D'ANGIO' is a PhD student at the University of Birmingham in the School of Metallurgy and Materials. Current research interests in are focused on the Microwave-Heated Chemical Vapour Infiltration of ultra-high temperature ceramic phases.



VIRTUDES RUBIO DIAZ completed a BA in Environmental Sciences and MSc in Bioengineering at Miguel Hernandez University of Elche (Spain). She then completed a PhD in Biomaterials in the Biomaterials Unit of Bioengineering Institute at Miguel Hernandez University of Elche, working with calcium phosphate bioceramics and biocements doped with silicon for bone restoration and substi-

tution. Currently she is working at the University of Birmingham as a Research Associate for the XMat - MBDA project



DR YUELEI BAI joined the XMat team, Department of Materials, Imperial College London as the Sponsored Researcher (visiting researcher) in Feb 2014, funded by the International Postdoctoral Exchange Fellowship Program from The Office of China Postdoctoral Council. He is an associate professor in the Centre for Composite Materials and Structures (CCMS), Harbin Institute of Technology (HIT). Dr. Bai is conducting the research on the phase stability and thermal properties of MAX phases using *ab initio* calculation based on density functional theory (DFT).



LUCY MARTIN recently joined EPSRC as a portfolio manager of the Materials Engineering and Resource Efficiency portfolios from now on and is the new EPSRC contact for the XMat grant.

Outreach—Imperial Festival 2014



Imperial College
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 public and alumni visitors descended on Imperial's South Kensington campus to enjoy the interactive, workshops, tours, talks and performances on offer at the 2014 Imperial Festival.

The XMat project exhibited in the Imperial festival as a part of an EPSRC programme outreach activity.

A flyer explained the scope and aim of the project while a video was displayed showing the Oxy Acetylene Torch Test - one of the lab based techniques to test materials with high heat flux and temperature. An interactive atomic model demonstrated the vibrations of solid molecules as the temperature increases and eventually overcomes the bonds between the atoms and the organised structure of a solid is lost and it becomes a liquid.



Out and About

COLLABORATORS

XMat is entirely collaborative. The team includes academics at Imperial College London (ICL) and Queen Mary University London (QMUL), UK, and is led by the University of Birmingham, UK. Around 25 other organisations are involved in the project, including industry, government bodies and overseas universities.



Jon Binner gave an invited talk on 'Processing and Properties of UHTC Composites', in 13th International Ceramics Congress, Tuscany, Italy, June 2014.

Mike Reece also gave an invited talk in 13th CIMTEC on 'Densification of UHTCs by Electric Current/Field Assisted Sintering' in Tuscany, Italy, June 2014.

Bill Lee, At EPSRC DISTINCTIVE (Decommissioning, Immobilisation and Storage Solutions for Nuclear Waste Inventories) Consortium Kick

-off Meeting, Leeds, "Work Package on UK Legacy Ponds and Silos Wastes" April 29th 2014.

Mike Reece and Salvatore Grasso visited IFAM in Germany (Dresden) on April the 10th. The purpose of the visit was to get an update on the SPS research trends in Germany. On April 11 they visited SPS manufacturers FCT Systeme GmbH Rauenstein, to discuss possible improvements and modifications of the existing SPS furnace at QMUL.

Mike Finnis is giving an invited talk in ICMR Summer Workshop on Ab-initio description of charged systems and solid/liquid interfaces for semiconductors and electrochemistry, Santa Barbara, 6-11 July 2014.

Andy Duff gave an invited talk at CIMTEC 2014: "Bringing Modelling to UHTCs"

Doni Daniel, "XMAT project on Zr-Al-C and water vapour corrosion resistance at high temperature" in CARAT 2nd conference call on MAX phase collaboration at Dalton Nuclear Institute, The University of Manchester, June 2014.

ACerS' PCSA

Congratulations to both Theresa and Andrea for being selected as an ACerS' President's Council of Students Advisors (PCSA) delegates for the upcoming 2014-2015 year! Their term as a PCSA delegates will begin at the PCSA Annual Delegate Meeting on October 11 and 12, 2014, which is the weekend

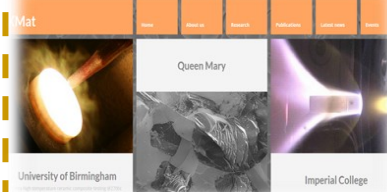
prior to MS&T'14 in Pittsburgh, Pennsylvania, USA.

Theresa (Imperial College) and Andrea (University of Birmingham) are the PhD researchers from the XMat project will be representing the team during their position as an ACerS' PCSA delegates.



Theresa
Davey and
Andrea
D'Angio —
ACerS'
PCSA
delegates

Further Information : For more information please contact Dr Amutha Devaraj (Technical Manager, ICL adeva-raj@imperial.ac.uk) or Ms Keeley Austin (Administrator, UoB k.j.austin@bham.ac.uk)



<http://www.xmat.ac.uk>