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The logo for the Ceramics and Composites Laboratory (CCL) at The University of Sheffield. It features the letters 'CCL' in a large, bold, black sans-serif font, centered between two horizontal yellow bars.

Ceramics and Composites Laboratory  
The University of Sheffield

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### Out and about

Clair Calvert visited the SuperSTEM at Daresbury from 15-17th February. Whilst there Clair analysed grain boundaries in CCTO (24hour sinter at 1070oC) using EELS and HREM. Using the SuperSTEM allows her to look in detail at the grain boundary with an electron probe size of 1.5 Angstroms; Sheffield's JEOL 2010 FEGTEM can only achieve a probe size of ~1nm (10 Angstroms).

Zhaoxia Zhou attended a 1-day meeting "A celebration of 25 years of the tribology group of the Institute of Physics" organised by Prof W Mark Rainforth (Chair 2002-2005). The talks covered tribology of polymers and tyres, wear in information storage devices and tribological challenges in micro-electro-mechanical systems (MEMS), wear and nano-indentation in thin films and coatings, and friction of human skin. Zhaoxia found the meeting very informative and inspiring as a young researcher in the field.

Frank Jones and Xiaoming Liu attended the Gordon Conference on Composites 2006 (Ventura, USA) from the 15th - 20th January. Frank gave an invited keynote lecture titled "Phase-stepping photoelasticity for studying stress transfer at interphases and interfaces in model composites", authors: FR Jones and FM Zhao. Xiaoming presented a poster titled "Selective adsorption of mixed organic silane on fibre surfaces", authors: Xiaoming Liu, JR Thomason, FR Jones.

Vincent Aerts has spent two months at the Polymer and Composites Section, Technical University Hambury-Harbury, Germany where he was studying the adhesion between fibres and aluminium in glass fibre/aluminium resin composites.

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### Publications

Bingham PA, Hand RJ, Forder SD, Lavaysierre A, Kilcoyne SH, Yasin I, "Preliminary studies of sulphate solubility and redox in 60P(2)O(5)-40Fe(2)O(3) glasses", Mat. Lett. 60 (6): 844-847 2006

Rawal R, Feteira A, Hyatt NC, Sinclair DC, Sarma K, Alford NM, "Microwave dielectric properties of hexagonal 12R-Ba3LaNb3O12 ceramics", J. Amer. Ceram. Soc. 89 (1): 332-335 2006

Rawal R, Feteira A, Flores AA, Hyatt NC, West AR, Sinclair DC, Sarma K, Alford NM, "Dielectric properties of the "twinned" 8H-hexagonal perovskite Ba8Nb4Ti3O24" J. Amer. Ceram. Soc 89 (1): 336-339 2006

Mirsaneh M, Reaney IM, James PF, Hatton PV, "Effect of CaF<sub>2</sub> and CaO substituted for MgO on the phase evolution and mechanical properties of K-fluorrichterite glass ceramics", J. Amer. Ceram. Soc. 89 (2): 587-595 2006

Huggett, J. M., McCarty, D. K., Calvert, C. C., Gale, A. S. and Kirk C. (2006). Serpentine-nontronite-vermiculite mixed clay layer from the Wenches Formation, Claiborne Group, Middle Eocene, NE Texas. Clays and Clay Minerals, 54 (1), 101-115.

Brooks, D.J., Douthwaite, R.E., Brydson, R., Calvert, C., Measures, M. G. and Watson, A. (2006). Synthesis of inorganic fullerene (MS<sub>2</sub>, M= Zr, Hf and W) phases using H<sub>2</sub>S and N<sub>2</sub>/H<sub>2</sub> microwave-induced plasmas. Nanotechnology, 17, 1245-1250.

Zhao F. M., Hayes S. A., Patterson E. A., and Jones F. R., "Phase-stepping photoelasticity for the measurement of interfacial shear stress in single fibre composites". Composites Part A, 37 (2) 2006, 216-221.

Bandyopadhyay-Ghosh S., Reaney I. M., Johnson A., Brook I. M., Hurrell-Gillingham K., and Hatton P. V., "Castability and Biocompatibility of Novel Fluorcanasite Glass-Ceramics", Key Engineering Materials, 309-311, 293-6 (2006).

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### Departmental seminars

The following Departmental seminars are being held in the forthcoming month and may be of interest to CCL members:

- 8 March Prof Neil Alford "Frequency Agility in Dielectric Resonator Filters"
- 15 March Dr Adrian Brough "NMR of Engineering Materials"
- 29 March Prof Ivan Parkin "Sunlight - Rainbows and Windows"

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### Visitors to the CCL

N. Maso, H. Beltran and E. Cordoncillo visited the CCL at the end of January. The two day visit was part of continued collaboration between Tony West's group and researchers based at the Universidad Jaime I, Spain. This collaboration is based on sol-gel synthesis of electroceramics.

Dr Prabahan Sahaya and Ms Teresa Ludu Nathan visited the CCL for 11 days in early February. They have come from the University of Nottingham's Malaysia campus, Selangor, Malaysia, which Tony West visited at the end of 2005. During their stay they have been working with Gabi Miles and Denis Pasero.

Dr Lu Li visited the CCL from the National University of Singapore on the 21<sup>st</sup> February. Whilst in Sheffield, Lu Li discussed Lithium battery materials with Tony West and Denis Pasero and recent advances in ferroelectrics with Derek Sinclair and Ian Reaney.

Mr Filippo Maniscale and Prof Natalie Jordan from Cytec Engineering Materials Ltd visited the CCL from the 13<sup>th</sup> -17<sup>th</sup> February to learn how to carry out a fibre fragmentation test and manufacture the relevant samples; they were helped by Zheng Liu.

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### New XRD section on website

The department's website now includes useful user information about the X-ray Diffraction Laboratory. Users/potential users of the laboratory will be able to visit the pages to find out about the equipment available as well as tips on how to perform crystallite size analysis and the Rietveld method.

The information can be reached from the following web address:  
<http://www.sheffield.ac.uk/materials/about/facilities/x-ray-diffraction>

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### Technical meeting

The next Technical Meeting will be held on the 30<sup>th</sup> May in the afternoon. Can you please keep your diaries clear for this time. All CCL members should attend.

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### Future composites events

The Advanced Composites Manufacturing Centre, based at the University of Plymouth, has an international reputation for its industry-focused R&D work and training and education programmes. In the coming year it will be running the following courses/conferences that may be of interest to CCL members:

- Composites for Renewable Energy 3 days 28<sup>th</sup> - 30<sup>th</sup> June
- Design with Composite Materials 3 days 4<sup>th</sup> - 6<sup>th</sup> July

For more information about these events or for further information about the ACMC visit its website at [www.plymouth.ac.uk/acmc](http://www.plymouth.ac.uk/acmc).

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### Access to central facilities

ISIS beam time. Proposals can now be submitted for Round 2006\_2 to get ISIS beam time. The deadline for applications is 16<sup>th</sup> April. Further information can be obtained from:

<http://www.isis.rl.ac.uk/applying/index.htm>

SINQ (Swiss Spallation Neutron Source) at the Paul Scherrer institute in Switzerland will accept proposals for from April 10<sup>th</sup> to May 15<sup>th</sup> through its Digital User Office. Further information can be obtained from:

[http://sinq.web.psi.ch/sinq/sinq\\_call.html](http://sinq.web.psi.ch/sinq/sinq_call.html)

Calls for access to NCESS (National Centre for Electron Spectroscopy and Surface Analysis) are expected to be made in April and October of this year. For further information visit:

<http://www.dl.ac.uk/NCESS/>

SRS deadlines are expected to be 1<sup>st</sup> May and the 1<sup>st</sup> November. Further information will be available on the User Liaison Office website:

<http://srs.dl.ac.uk/ULO/index.htm>

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### News section on the Department webpage

To make the Department website a little more interesting, a "news" section has been added. Please remember to send me or Mike Cooper content that you want adding. To make the page successful, information will need to be added regularly. It would be great if we can highlight CCL achievements regularly. News stories could include funding awards, prizes won, top level publications, joining a journal's editorial board etc. To keep up to date with Department news visit the website:

<http://www.sheffield.ac.uk/materials/news>

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### University Open Archiving Policy

In 2005 the University's Senate approved a policy on open archiving. Open archiving has been described as 'the deposit in managed repositories of peer-reviewed papers accepted for publication by established journals'.

The policy:

- Strongly recommends that all academic and research staff and postgraduate students deposit a copy of their peer-reviewed research outputs in the 'White Rose Sherpa ePrints repository'.
- Encourages academic departments and research centres to disseminate information on open archiving to research-active staff and postgraduate research students, and to ensure that they are aware of Committee policy in this area.
- Encourages researchers to support journals, which allow self-archiving of peer-reviewed research outputs.

The Policy can be viewed at:

<http://www.shef.ac.uk/content/1/c6/03/25/85/OpenArchiving.pdf>

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### Change to Research Council Deadlines

All submissions to research council calls will have to be submitted by 4pm, under a new closing date deadline agreed by the research councils.

The deadline covers all calls and closing dates for the research councils and other funders using the Je-S system (some DTI funding calls, for example) and comes into effect on 1 March 2006.

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### Funding Success

Mehdi Mirsaneh has been awarded £1250 from WUN exchange programme to spend 3 weeks in July 2006 at Materials Research Institute (MRI), Penn State University, USA. The purpose of his visit is to study the application of thin/thick film glasses and glass-ceramics for multilayer capacitors in which MRI is the world leading centre. This work is in collaboration with Professors Mike Lanagan and Carlo Pantano.

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Best Wishes

Helen Fletcher

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### Diary dates:

Coffee afternoon - Friday 31<sup>st</sup> March, 3pm, Turner Museum

Technical meeting - Tuesday 30<sup>th</sup> May, afternoon, LT21

Kanno Ryoji visiting the CCL June 5<sup>th</sup>-9<sup>th</sup>

Joint Sheffield-Liverpool Solid State Chemistry meeting 7<sup>th</sup> June

**Remember - you can check CCL events on our website:**

<http://www.sheffield.ac.uk/ccl/calendar.html>