

*False colour secondary electron SEM image of GaN nanowires
(courtesy of Mr An Bao)*

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LETTER FROM THE CHAIR

Dear EMAG Members,

Time has certainly flown. It hardly seems any time since I was nominated to take over as Chair from Pete Nellist and was duly elected at the AGM held alongside the meeting in honour of Prof. Mike Whelan at Oxford in July 2012. Now, the time nears when I give up the Chair to a new incumbent. Naturally, members of the committee have already discussed a nomination, and the election will be held at the AGM, which this year takes place at the MMC2014 conference in Manchester Central at 12 noon on Wednesday 2nd July. You should already have heard plenty about this conference, and the two sessions organised by EMAG have now had their programs finalised, and these look very good with an excellent mix of invited and contributed oral presentations, as well as many posters.

Over the last year, I have also had the pleasure of participating in the EPSRC-funded working party looking at the present and the future of electron microscopy in the physical sciences in the UK. We recently had a Town Meeting at Imperial College London to present the outcomes of this in the review of the current ecosystem, proposals for access mechanisms for national or regional centres of excellence, proposals for more nationally coordinated training, and the starts of a consideration of the new technical developments in EM required for the UK physical sciences.

One of the interesting outcomes of this exercise was that we worked with colleagues from Bioimaging UK. There is more on this below. One result of this is that I am working with some members of Bioimaging UK (led by Dr Lucy Collinson at Cancer Research UK) to put together a national database of microscopy facilities, to be hosted by the RMS. Once this has been set up, all of you who manage microscopy facilities of whatever size will be invited to contribute to this.

Finally, I just want to highlight that EMAG2015 will be taking place in Manchester in July next year, as highlighted below, as part of the larger MMC2015 conference.

So, it just remains to say that I hope to see you in Manchester this summer and that it has been a privilege to chair EMAG for these two years and I wish you all well.

With all best wishes

Ian MacLaren

EMAG ANNUAL GENERAL MEETING

The AGM of the EMAG group will be held at Manchester Central on Wednesday 2nd July 2014 at noon, alongside MMC2014. No fee is charged to attend the Annual General Meeting. A separate agenda was also circulated electronically.

Nominations for the following group officers are invited and should be submitted using the nomination form circulated electronically:

Chair
Honorary Secretary / Honorary Treasurer
1 Ordinary Member

Please send nominations to the Secretary, Cate Ducati (cd251@cam.ac.uk), before Friday 20th June 2014.

If you cannot attend the AGM but have any issues you would like to be raised at the meeting, please contact the honorary secretary.

AGENDA

- 1) Apologies for absence
- 2) Minutes of previous AGM
- 3) Chairman's report for the year 2013
- 4) Honorary Secretary's report for 2013
- 5) Honorary Treasurer's report for 2013
- 6) Election of group officers (see below)
- 7) Any other business (please notify the Honorary Secretary in advance)

SUPERSTEM UPDATE

by Ian MacLaren, Sarah Haigh and Quentin Ramasse

Here at SuperSTEM we are pleased to announce that we recently achieved an important 'milestone', namely our 100th application for microscope usage in the current funding period. The management committee regularly reviews new applications for time on our aberration corrected instruments and we are always glad to discuss new projects with potential users (contact info@superstem.org with any informal enquiries).

We are also delighted to welcome Iain Godfrey back to work at the SuperSTEM after an extended period of leave. Iain provides vital technical support that underpins the successful running of the laboratory and his presence will be increasingly vital as our third aberration corrected microscope is scheduled for delivery in October 2014. This instrument is a monochromated UltraSTEM with better than 20 meV energy resolution, providing exciting opportunities for new experiments. Over the summer Dr Fredrik Hage from SuperSTEM will be involved in the microscope's construction and commissioning at the NION factory. We hope that Fred's involvement will ensure that the instrument will be installed smoothly and quickly available for external access; interested users should contact Quentin Ramasse, Rik Brydson or other members of the SuperSTEM team as soon as possible to discuss the potential for scheduling early experiments using this cutting edge technology.

EM COMMUNITY “TOWN HALL” MEETING on INFRASTRUCTURE and TRAINING COORDINATION...

As many of you will be aware, an EM Working Group has been convened to consider a roadmap for coordination and distribution of facilities in Electron Microscopy in the Physical Sciences in the UK. This group includes representatives nominated by EMAG, the RMS, SuperSTEM, as well as representatives from BioImagingUK. The consultation process culminated with a Town Hall meeting, attended by 53 people, which took place on the 9th of April 2014 at the Royal School of Mines, Imperial College London.

The documents and slides presented at that meeting, along with a report summarising the discussion, can be found on the RMS website at the following link:

<http://www.rms.org.uk/outreach/advanced-electron-microscopy-working-group.htm>

... and ADVENTURES AT THE BIOLOGY-MATERIALS INTERFACE

An important outcome of the meeting was the desire to combine the physical science oriented coordination activities with the similar activities being developed through the BioImagingUK initiative. To enable that, a one-day meeting will be held on Monday 30th June at Manchester Central, immediately prior to the MMC2014 conference, with a discussion of cross-disciplinary initiatives of both a scientific and strategy/coordination nature. The meeting is free to attend, and further details and registration can be found at:

<http://www.mmc2014.org.uk/conference/associated-meetings/cross-disciplinary-em-and-lm-meeting/>

175th ANNIVERSARY OF the RMS

The RMS will be celebrating its 175th Anniversary at MMC2014 with a special conference session on the afternoon of Wednesday 2nd July, where the plenary talks will be given by Professor Ernst Stelzer Hon FRMS and Dr John L Hutchison Hon FRMS. The session will be followed by a celebratory banquet at Old Trafford Cricket Ground that evening. To find out more about MMC2014 please see:

<http://www.mmc2014.org.uk/conference/overview/>

RMS celebrations will also include an event at Glaziers Hall in London on the 19th of September 2014.

Happy Anniversary to the RMS from EMAG!

EMAG2015 @ MMC2015

As you may already be aware, we will be working with the RMS to organise the next EMAG conference at Manchester Central in July 2015 under the umbrella of the larger MMC2015 conference. We are not unique in this, and two other meetings on Frontiers in Bioimaging and Scanning Probe Microscopy will also be happening under the same roof. This is an excellent opportunity to bring together different microscopy communities and share a larger, more exciting exhibition. A first announcement about this will be sent later in the year.

More meetings: An EMAG meeting in 2016

We are planning to hold a smaller focussed group meeting in the Easter break of 2016. This will be held on a University campus over 2 days, without any large exhibition (although some may bring tabletop displays) and will be in a single session format. The single session format will mean that the range of topics for oral presentation will need to be restricted and it will be more thematic than larger meetings. Early discussions are underway with a potential venue, but please watch this space for further details.

IoP RESEARCH STUDENTS CONFERENCE FUND

If you are a student member and are looking for funding to attend a meeting or conference, please apply for an RSCF bursary, which may give you up to £250 towards your costs. We have several of these bursaries to give away each year. Check eligibility criteria and download the form at http://www.iop.org/about/grants/research_student/page_38808.html



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IoP Institute of Physics

MEETING REPORTS

Eurosuperalloy2014

Giens in France, 12-16th May 2014

Mr Yiqiang Chen, PhD Student, University of Manchester

From 12th-16th May 2014 I attended the Eurosuperalloy2014 conference located in the French Riviera of France. I attended a wide variety of talks and especially enjoyed the first plenary talk 'Superalloy: on Trend, Needs, Challenges and Opportunities' by Maxim Konter from ALSTOM company. In his talk he pointed to the potential of MAX-phases as new candidate materials for application in high temperature turbines. These materials possess good mechanical properties and low conductivities, and could enable higher operating temperatures compared to current nickel-base superalloys although stable processing techniques still need to be developed.

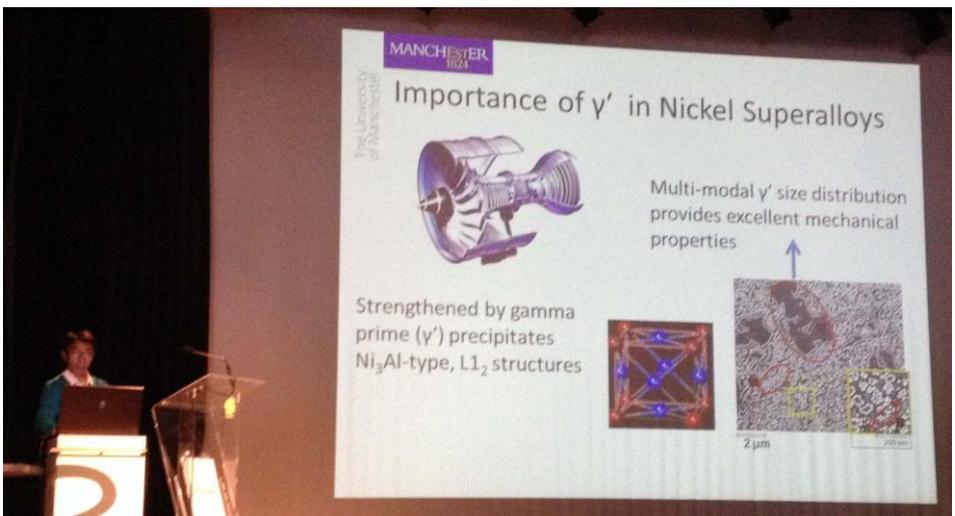
Another interesting talk was presented by Cathie Rae from Cambridge University. She discussed the affect that elevated bulk Co content could have on the recrystallisation of Ni superalloys, due to the change in γ' solvus

temperature and stacking fault energy of the γ phase. This idea could be further verified by measuring the phase chemistry of the γ' phase and it was great to have the opportunity to discuss our common interests in compositional variations after her talk. I was particularly interested as measuring the phase chemistry of the γ' phase is one of the key topics of my own work recently published in *Ultramicroscopy*¹ and which I was fortunate to be able to give an oral presentation about at this conference.

In addition, at this conference I learned about a brilliant experimental approach whereby convergent beam electron diffraction (CBED) and energy dispersive x-ray (EDX) spectroscopy data are acquired simultaneously. This allows both strain and compositional variations to be mapped in the material and hence enables the study of local compositional-strain dependencies in the lattice. This provides powerful input for the study of deformation mechanisms.

Finally, I have to say that I met with a lot of scientists and engineers working on superalloys and had some very interesting conversations with them. It is invaluable for me to have this opportunity to know what they are doing and how much they enjoy their work. This excites me and greatly encourages me in my own academic research.

[1] Y.Q. Chen, T.J.A. Slater, E.A. Lewis, E.M. Francis, M.G. Burke, M. Preuss, S.J. Haigh, Measurement of size-dependent composition variations for gamma prime (γ') precipitates in an advanced nickel-based superalloy, *Ultramicroscopy*, 114, 1-8 (2014)



EMS MEMBERSHIP

EMAG members are reminded that they are all automatically members of the European Microscopy Society, at no cost to themselves. However, in order to receive information from the EMS, it is essential to send your e-mail address to the EMS secretary - this cannot be sent by the IOP due to the Data Protection Act. This is important, since almost all communications from the EMS are sent by e-mail, including information for voting for the next Executive Board.

Send your e-mail address (and preferably your other details, postal address, phone & fax numbers) to: secr@eurmicsoc.org and indicate whether you agree to include this information in the EMS Yearbook. If you do NOT wish to appear in the Yearbook, your e-mail address will be used solely for the dispatch of information by the EMS secretary (Prof. Dr. D. Schryvers).

The EMS web page can be viewed at: <http://www.eurmicsoc.org/>

EMAG members are also reminded of the availability of EMS Bursaries. For more details, see <http://www.eurmicsoc.org/scholarships.htm>

FUTURE MEETINGS OF INTEREST

Microscience Microscopy Congress 2014 (MMC2014), 30th June - 3rd July 2014, Manchester, UK

International Microscopy Congress 2014 (IMC2014), 7th -12th September 2014, Prague, Czech Republic

EMAG 2015 @ MMC2015, 30th June - 2nd July 2015, Manchester, UK

PICO 2015, the Third Conference on Frontiers of Aberration Corrected Electron Microscopy, 19th – 23rd April 2015, Kasteel Vaalsbroek, Netherlands, including a special session in honour of Prof. Harald Rose in his 80th year.

<http://www.er-c.org/pico2015/about.htm>

EMAG contact points

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Email: conferences@iop.org

<http://www.iop.org/events/scientific/conferences/index.html>

Group matters: Science Support Officer

Email: groups@iop.org

EMS: European Microscopy Society

Email: secr@eurmicsoc.org

<http://www.eurmicsoc.org/index.html>

MRS: Materials Research Society, 9800 McKnight Road, Pittsburgh,
PA 15237, USA.

Tel: +1 412 779 3003, Fax: +1 412 779 8313

<http://www.mrs.org/meetings/>

MSA: Microscopy Society of America, 12100 Sunset Hills Rd., Suite 130,
Reston, VA 20190, USA.

Tel: +1 703 234 4115, Fax: +1 703 435 4390

<http://www.microscopy.org/>

RMS: Royal Microscopical Society, 37/38 St. Clements, Oxford, OX4 1AJ.

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Email: meetings@rms.org.uk <http://www.rms.org.uk/events/>

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