

Institute *of* **Physics**

**Electron Microscopy and
Analysis Group**

Newsletter

Jan 2004

ELECTRON MICROSCOPY AND ANALYSIS GROUP

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ELECTRON MICROSCOPY AND ANALYSIS GROUP

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ELECTRON MICROSCOPY AND ANALYSIS GROUP

Dear EMAG Member,

Since the July 2003 Newsletter there have been several changes to the committee membership. Rod Shipley and Simon Galloway have completed their term of office, and Ron Doole and Prof. David Cockayne have step down as co-opted members after a very successful EMAG conference in Oxford (many thanks indeed for all your hard work with this event). We welcome new members Richard Baker, Pete Lander, Kevin Meade and Pauline Sillers to maintain the academic / industrial balance of the committee and an appropriate UK geographical representation.

This main theme of this Newsletter is to report on the detailed discussions that have been held on the future of the EMAG conference series, arising from the proposal for co-association of EMAG with RMS(Micro). In view of the many inputs received from group members and trade representatives, we present notes from the EMAG AGM, a meeting held between EMAG, RMS and the IoP, and an extract from the minutes of the September 2003 EMAG committee meeting. The aim is simply to illustrate the many issues that have been considered to date.

The outcome of these discussions has been to agree to continue with the EMAG conference series in the time honoured tradition of an academic conference series but by necessity with either a scaled down format for the trade exhibition, or by using an independent, professional company to run it. Maintaining the community spirit of the EMAG conference series was very high on the concerns of the academics. Accordingly, we are pleased to announce that EMAG 2005 will be held at the University of Leeds (provisional dates 31st August – 2nd September 2005).

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It is with extreme sadness that we report the untimely death of committee member, Dr Tiesheng Rong, at far too young an age. An obituary written by Prof. Ian Jones appears later in this Newsletter.

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BURSARIES

Members are reminded that EMAG bursaries are available for research students and younger postdocs who wish to attend relevant conferences either in the UK or abroad. Preference will be given to those who are presenting papers and have shown that they have tried to obtain part of their funding from other suitable sources. In general, only one bursary per year can be awarded to each person. A completed application form (see the back of this Newsletter) as well as a short reference from a research supervisor confirming eligibility and suitability should be sent to the Chairman of the Bursary Sub-Committee, Dr David McComb¹. Each successful applicant must submit a short report on the meeting they attended to the Chairman of the Bursary Sub-Committee.

Further information on EMAG activities are available at the IoP website at the address:
<http://www.iop.org/IOP/Groups/EM/>.

***Dr Paul D Brown, Nottingham
EMAG Secretary / Treasurer***

¹ Please note a change of address to the Department of Materials, Imperial College London, Exhibition Road, London SW7 2AZ. (Email: d.mccomb@imperial.ac.uk).

ELECTRON MICROSCOPY AND ANALYSIS GROUP

CVs of new EMAG members

Dr Richard Baker, BSc (Chemistry, Durham), PhD (Chemical Engineering, Imperial College), CChem, MRSC has been a Lecturer in Physical and Inorganic Chemistry at the University of Dundee since 1999 and obtained a tenured position in 2003. Between degrees he worked in R&D at British Steel for three years. His current research can be characterised as the materials chemistry of functional materials and lies in the specific areas of solid state and polymer electrochemistry, heterogeneous catalysis and high resolution transmission electron microscopy (HRTEM). During his PhD, he demonstrated that new LaCrO_3 -based anode materials showed promise for use in solid oxide fuel cells (SOFCs) for direct methane combustion. Subsequently, he took up European Community Post-Doctoral Fellowships at the Solid State Electrochemistry Laboratory, Institut National Polytechnique de Grenoble, France, then in the Electroceramics Group, University of Aveiro, Portugal, and finally in the Catalysis Group at the University of Cádiz, Spain. Current projects include combined chemical synthesis and electrical power generation using new ceramic fuel cell reactors, the electrochemistry of electro-active polymer devices and the elucidation of the link between nano-structure and performance of catalyst and fuel cell electrode and electrolyte materials using HRTEM.

Pete Lander has worked in electron microscopy since 1982, originally working in the Department of Physics at Warwick University. He joined JEOL in 1985 as an engineer specialising in TEM. At JEOL he has worked in various roles for the customer support department culminating in his role as Technical Support Manager. In this position, he had overall technical responsibility for all of JEOL's products but maintained his speciality for TEM. He has been a trainer for JEOL as well as specialising in the installation and characterisation of field emission transmission electron microscopes. He moved to join the JEOL UK Sales Team in 2001 bringing his technical knowledge of TEMs to the Sales force. His current areas of responsibility are for TEM Sales support in the UK as well as maintaining the East of England, Israel and South Africa sales territories for JEOL UK.

Kevin Meade worked for BP at the research centre Sunbury as a chemist in the field of electron microscopy, x-ray analysis and image processing. The EM department serviced the core businesses of oil, chemicals & exploration. In 1993 Kevin joined Cambridge Instruments sales department working as applications specialist then in SEM sales. Kevin now works for Oxford Instruments in sales, covering the east half of England and Scotland.

Dr Pauline Sillers studied Chemical Physics at Glasgow University from 1990 – 1994. She then embarked on a PhD in the Solid State Physics group, also at Glasgow, studying the crystal growth of pigments by electron microscopy which was a CASE project with Zeneca. She joined Zeneca in 1998 as a Development Chemist working on process improvement of various products. The agrochemical division of Zeneca became Syngenta in 2000 and she now looks after the Physical Sciences group at Grangemouth, which concentrates its efforts on physical form studies of agrochemical crystals in both production and development projects.

ELECTRON MICROSCOPY AND ANALYSIS GROUP

EMAG annual activity report 2003

We briefly summarise the activity of EMAG over the past year

Committee meetings (number in attendance)

- 13/01/03 (10)
- 27/05/03 (9)
- 24/09/03 (8)

All meetings held at IoP, London.

AGM

- 03/09/03 (~30)

Examination Schools, University of Oxford

EMAG events

- 02/09/03 EMAG 2003 Summer School, University of Oxford
- 03-05/09/03 EMAG 2003 Conference, University of Oxford,

The Advanced School was well received. There were 19 attendees with 4 lectures in the morning and a choice of 2 out of 5 different tutorial classes in the afternoon.

There were 178 registrants at the conference (compared with 157 in 2001), comprising 60 members; 39 non-members; 54 students/retired and 25 free attendees (i.e. invited speakers, conference organisation committee, student helpers). An increase in student and non-member attendees, and 15 x 1-day registrants was encouraging. There were also 29 Exhibition visitors admitted free. 117 papers were refereed for publication in the Institute of Physics conference series.

EMAG sponsored meetings

- 31/03-03/04/03 MSM XIII, Cambridge
- 06-09/04/03 CMMP 2003, Belfast
- 14/07/03 FEGTEM V, Leeds
- 13-14/01/04 Nano Particles and Nanostructured Materials: Implications for Health 2004, Daresbury Laboratories

Bursaries

- 6 conference bursaries were provided to Christian Lang (Oxford); Mike Fay (Nottingham); Miss Rebecca Nicholls (Oxford); Grigore Moldovan (Nottingham); Damien McGrouther and Dr Steffi Friedrichs (Oxford) Total £1,000
- 29 student bursaries were provided for the EMAG 2003 conference. Total £3,190

Forthcoming EMAG sponsored sessions

- 06-08/07/04 MicroScience 2004, EXCEL, London (STEM developments)
- 04-07/04/04 CMMP 04, Warwick (Nanoscale Physics)

ELECTRON MICROSCOPY AND ANALYSIS GROUP

Review of EMAG conference 2003



(photos c/o Crispin Hetherington)

This year's conference and Advanced School was held at the University of Oxford and continued the EMAG tradition of high scientific standards combined with a true sense of academic and industrial community. Encouragingly the number of registered delegates rose from 2001, including increases in student and non-member attendees as well as day visitors. The central Oxford location chosen for the conference and exhibition provided for a great atmosphere and a lively social programme. As always the success of these meetings relies on the immense hard work of those responsible for both the scientific and local organisation. Many, many thanks are due to all those involved.

The scientific programme was co-ordinated by Andrew Bleloch who, together with the help of committee members, engineered a fresh format with a superb range of stimulating sessions containing an impressive and diverse list of plenary and invited speakers. The standard of contributed presentations and also particularly posters should be commended. As usual the awarding of poster prizes was an extremely difficult task. The sterling work of Steve McVitie and David McComb, the joint proceedings editors, should ensure that the approximately 120 papers should be delivered to delegates in the New Year and will provide a snap shot of current research in the increasingly important area of microscopy and analysis.

The tireless efforts of Ron Doole in organising a new style exhibition fully integrated into the conference are greatly appreciated. Feedback from exhibitors and visitors indicates that the exhibition was a resounding success, which is particularly welcome in these increasingly hectic times for the trade.

Local organisation and social events were expertly managed by Amanda Petford-Long and Jasmina Bolfek-Radovani of the IoP. These included a welcome bar, a visit to the History of Science Museum and a drinks reception and Conference Dinner in the impressive surroundings of Balliol college - a daunting prospect for the after dinner speaker!

A highly successful one day Advanced School in the Department of Materials at Oxford preceded the main conference and was organised by David Cockayne. Attendance remained high and the mix of lectures and demonstrations provided an excellent overview of specialist analytical techniques for research students.

Overall an enjoyable and successful meeting which provides encouragement to preserve the current EMAG conference format for future years. See you next time!

Rik Brydson

ELECTRON MICROSCOPY AND ANALYSIS GROUP

Consultation process on the future of the EMAG conference series

The EMAG conference series has traditionally combined a highly regarded scientific session with a very impressive trade exhibition. The conference has survived to this day because of the generous support of many sponsors and the valuable time donated by many academics. The proceeds from the exhibition, once costs for the conference are balanced, are channelled into the EMAG accrual fund which is used for bursaries to support the next generation of research scientists, and we would suggest this is possibly the most important function of EMAG. This approach, however, has always placed a heavy burden on the host institution for each conference and the level of time commitment is now recognised as being excessive. Accordingly, the suggestion is that the balance of the conference needs to change. This trend was perhaps reflected in the recent Oxford conference where the Trade exhibition did not include the large instruments more commonly associated with this event.

In order to explore possible routes for the future to progress the EMAG conference and to develop stronger links with the RMS, a number of reciprocal discussions were held at RMS and EMAG committee meetings during 2003 to explore the possible options of co-association of the EMAG conference with the RMS Micro Exhibition.

The outcome of this process eventually was to agree not to associate these meetings as originally suggested. The main issue was the practical difficulty of switching the bi-annual cycle of either of the meetings. Nevertheless, in view of so many discussions on this topic and the many voices heard, we feel it is appropriate to report on the views expressed during these meetings, so that the community can see how this discussion has progressed.

We present here the notes recorded at the EMAG AGM on this subject, those recorded at a related meeting with representatives of the EMAG, RMS and IoP, held during the EMAG conference, and an extract from the EMAG committee meeting (Sept 2003).

(1) Notes taken during the EMAG AGM 2003, Sept 3rd, Oxford Discussion on the future association of EMAG and RMS/Micro.

- RMS and EMAG events have a very different format.
- EMAG is a stand-alone conference, rotating between different Universities and the sense of community needs to be retained.
- The reality must be faced that the conference Exhibition is very expensive to run and demands too much time from the academics to hold things together. There is a heavy burden on the local group in terms of both time commitment and budget.
- Options are to hold a rotating meeting at different Universities without an Exhibition, or to associate EMAG conference with RMS/Micro to allow delegates and Trade to meet.
- Maintaining an event on an odd year cycle would be good for the Exhibitors to avoid a clash with EUREM / ICEM.
- Important to keep the loose, collegiate feel of the EMAG meeting. Aim to keep as a separate, identifiable event. This might be lost if the event were held in London?
- Would it be feasible to associate with Micro in odd years and run small 2 day itinerant meetings in even years?
- EMAG could still run a good scientific conference without a formal Exhibition.
- The value of the Exhibition is to provide funds into the accrual fund to support student bursaries. Thus, effective collaboration must be maintained with Trade for future sponsorship.
- Comparison of income from different EMAG conferences highlights some problems with the Dundee meeting. £840 was generated for the accrual fund with IoP covering a loss from the conference. The problems were low attendance numbers and low take up of Exhibition space.
- Approx £12k to the accrual fund was generated from the Sheffield meeting, but this has provided an unrealistic perception of what could be routinely achieved.

- Some concerns were expressed about a previous EMAG / Micro conference in 1989 not having the feel of the traditional EMAG meetings.
- If the Exhibition is dropped then alternative routes to sponsor bursaries must be established.
- Could incorporate Trade poster / workshop sessions.
- Oxford meeting could have been held at a cheaper site if the total level of take up by Trade was known earlier.
- Maintaining a low EMAG conference fee has always been regarded important.
- One EMAG conference benchmark is the number of student attendees. A reduced rate for students must continue.
- A suggestion was made to improve the EMAG newsletter with contributed articles, adopt a quarterly format and sell advertising space in a fashion similar to the Australian microscopy society.
- It was suggested that comparison be made with other European EM societies.
- What motive would people have to attend either an EMAG meeting without an Exhibition or a combined EMAG/Micro meeting in London?
- EMAG requires camera ready formatted papers. This is a good way of providing a snapshot of the activity of the community and provides good training for young research students.
- Micro tends to adopt a lecture / tutorial system and attracts many 1 day visitors.
- Trade would prefer to retain London venue.
- Explore option of University of Greenwich, 2 stops away on the light railway.
- Trade exhibition useful for students to become aware of developments in technology.
- Balance of lectures and commercial contribution to a future EMAG conference needs care.
- The agreement of the community was obtained to conduct further discussions with RMS and IoP to examine the possibilities raised.

(2) Notes from meeting with IoP¹, RMS² & EMAG³ (Oxford, Sept 4th)

Belinda Hopley¹, John Brindley¹, Lynn Joyce², Paul Hirst², John Hutchison², Rik Brydson³, Paul D Brown³

The discussion concerned the future of the EMAG conference series and considered the possibility of improved collaboration with RMS/Micro.

Comments on the EMAG conference series

- A typical IoP subject area conference that is scientifically well regarded, attracts international delegates.
- Valued for providing a forum for young academics starting out / making their first presentations.
- Typically sponsor 30-40 student bursaries each EMAG conference (equivalent to free registration). EMAG also typically supports 8-12 bursaries for other conferences per annum.
- There is concern to ensure the next generation of research workers is adequately supported.
- IoP funding of EMAG is ~£3.7k pa. Used to fund committee meetings and to provide student bursary support. Other income to accrual account traditionally comes from profit from EMAG conference Exhibition (less £5k subsidy to conference to keep registration costs low). IoP run the conference and underwrite any losses.
- Difficulties were experienced with the Dundee meeting which generated £840 to the accrual fund, as compared with ~£12k from Sheffield.
- Expect to gain ~£4-5k from the Oxford meeting into the accrual fund.
- Present problem relates to a reduction in the number of companies, changes in the way trade advertise, plus concerns about Exhibition costs.
- EMAG Exhibition historically organised by local academics, with profit gained from selling stand space, workshops etc. But very time consuming and the cost of academic time is not included. Maintaining this situation is considered no longer possible.
- IoP aims to run conferences to break even (with conference subsidy).
- If conference makes a loss, groups are now expected to cover some of the loss from their accrual funds.
- Exhibition suppliers and users are an equal part of the community. Would diminish the quality of the event if Trade were not present in some form.

- It is also valuable for the next generation of researchers to meet with Trade, and to keep pace with technological developments.
- Approx. 30-35 delegates attended the EMAG AGM, out of ~ 450 EMAG members, of whom ~ 150 attended the EMAG conference.
- Comments from the EMAG AGM showed that the main concerns related to retaining the EMAG identity. The traditional conference series in a University environment helps to keep the community together. Coffee break conversations are highly valued. Regarded as being the closest thing to a Gordon style conference and this should be retained.

Comments on the RMS/Micro conference series

- RMS Micro is a biannual event held in even years in early July. Presently held in the same cycle as EUREM / ICEM meetings. (EMAG conferences run in early September, odd years, and there was a previous association of an EMAG meeting with Micro in 1989.)
- Micro attracts microscope users (both light and electron) and a large number of 1 day visitors for the Exhibition.
- RMS/Micro2004 again to be held at Excel. Previously held at a West End Novotel.
- Micro presently occupy 3000m², having sold ~ 1100m² of stand space then built in workshops, poster presentations etc.
- Tend to get day exhibition visitors or conference only visitors.
- Typically x2-x3 delegates are there to attend the Exhibition rather than the lectures.
- Optimum meeting would be 3 parallel conferences associated with Micro. E.g. drawing from Life Sciences / Materials / Nanotechnology / Instrumentation etc.
- Micro is becoming more attractive for International / European companies to present at and is developing as ~ EuroScience style conference, looking to attract a larger gathering of delegates.
- Micro would benefit from more delegates attending lectures. Have previously tried 3 day themes / 1 day meetings / individual sessions / workshops etc, with delegates passing through the Exhibition to get to the lecture theatres, to promote interaction.
- Difficult to run such an Exhibition at a University site, e.g. Warwick, Birmingham, Cardiff, Edinburgh, Nottingham, Leeds?
- Micro Exhibition subsidises RMS events for the following 2 years, so must be financially successful.

Collaboration between EMAG & RMS

- EMAG and RMS historically sponsor each other's meetings. RMS and EMAG alternately sponsor MSM.
- RMS run Micro which is regarded as being a very good exhibition with lectures / workshops attached.
- EMAG is a community event and well regarded as a scientific conference.
- It is recognised that EMAG and Micro would both benefit from closer association.

General comments / concerns

- Need to keep pace with changes, e.g. the emergence of BioSciences and Nanotechnology.
- Look at present situation, respond to current trends and bring related meetings together.
- This would allow some optimisation of the IoP/RMS service to the EM community. Ultimately funding is not the most important factor.
- The intention of IoP is to make such events better in the face of present declines in science.
- IoP suggest developing a bigger event that retains the ethos of the community conference.
- There is also need to understand why so many people in the community presently do not attend their group meetings. What can be done to increase people involvement? Advertise conference to other IoP groups / improve IoP web-sites / better advertising?
- Views are changing about involvement or allegiance to a single research group. Too many conferences for delegates to attend.
- Academics are finding it increasingly difficult to raise funds to attend conferences and get research people there, given present funding constraints within Universities. Everything now charged to research grants.
- Need better take up of RMS bursaries.
- Compare with other IoP communities.

- MSM recognised as having a good working formula for a successful conference series with a dedicated following of regular attendees.
- CMMP has grown over the past 30 years but numbers are now declining (e.g. Belfast)
- Suggestion to hold related group conferences in the same location. (E.g. Photonics @ Cardiff). E.g. separate conference dinners, but with common plenary speeches?
- Trade cannot continue to pay for large exhibitions such as past EMAG events. They would prefer fewer larger meetings.
- Could be possible to run EMAG without a trade exhibition, whilst arranging for direct sponsorship in the form of workshops / poster presentations / meet and greet receptions to cover student bursaries.
- London is an important location for attracting day visitors. Such visitors will be lost if Micro is held outside London

Comments on routes ahead

- Presently too early for trade to commit beyond Micro2004 for future Exhibitions.
- Suggest associating EMAG conference with Micro and make use of the University of East London (2 stops away by light railway) for cheap accommodation, whilst using the Excel site for lectures / interaction with Trade.
- A number of financial / logistical problems would need to be addressed.
- IoP's view is that these should not prohibit progress keeping the communities together.
- Costs for Excel are high, but these could come down if more people are brought in.
- Companies are tending to spend less on Exhibition space. Now need to consolidate various events.
- Need to retain Trade support for future meetings.
- Thus, scientific programmes needs to build in time for Trade.
- Also would need to maintain momentum. This could be lost if EMAG is associated with Micro on an alternate 2 year cycle, with an intervening conference being held at a University site with a reduced Trade involvement.
- Concerning conferences in July vs. September, it is noted that many academics spend the summer doing the work for autumn conferences, with research being limited during term time due to teaching commitments.
- Suggest associate other conferences with Micro, not just EMAG.
- Would need to consult with EMAG membership re: 2005 EMAG event.
- Could also consider EMAG 2-day focused meetings with overnight / conference dinner to keep the community together.

Actions

- IoP to look at Excel conference venue to see if the figures fit.
- RMS to address odd/even year issue for the running of Micro with Trade.
- Need to consult with EMAG membership re: 2005 EMAG event.
- UEL costs need to be obtained.
- IoP / RMS to look at conference cycle to gain perspective on longer term.
- If Micro2005 were to be realised, this would need a clear undertaking before the end of 2003 in view of long lead in time.
- Note 2005 is International Year of Physics / Einstein anniversary / tie in with improved public understanding of science.
- Will discuss again at the next EMAG committee meeting on Sept 27th.

pdb 16/09/03

(3) Extract from Minutes of the Group Committee Meeting held at IOP, 76 Portland Place, London at 1pm on Wednesday 24th September 2003

Future collaborations between EMAG and RMS

- Notes taken by PDB recorded during the EMAG AGM and from a joint meeting between EMAG/RMS and IoP held during the conference were tabled. It is intended to incorporate these

notes and aspects of the following discussion into the next Newsletter to keep the EMAG members informed of developments.

- RMDB reviewed the comments made at these meetings and a debate followed concerned the association of EMAG with the Micro Exhibition and the possibility of siting the next EMAG conference at the University of East London.
- The view emerged that EMAG should continue to work with RMS to associate these meetings, with a view to gaining agreement on the location and timing of the next EMAG conference by January 2004. A plan-B is also needed, so it was agreed that a future EMAG conference could run at a cheap University venue in a similar format to the Oxford meeting with a scaled down Exhibition (not run by the academics) and direct sponsorship for the student bursaries.
- It was recognised that EMAG must keep pace with change, embracing new themes such as nanotechnology and biomaterials.
- The IoP initiative to co-locate the Applied Optics / Quantum Electronics conferences is seen as being a good model for future meetings.
- Conference location is important to RMS and they would need to consult with their Trade Committee to examine the option of a meeting in 2005. More European interest in Micro is developing. Trade has a yearly budget for marketing, so long term planning might be a problem. It is recognised there are benefits for Micro by switching to odd years to avoid the big International meetings.
- BH of IoP had looked at the UofEL option as a conference venue. £30 b&b, 300 rooms available, 2 stops from Excel on Docklands light railway. They can take bookings for 2005 from early 2004. This is deemed to be a feasible option, but thought needs to be given to the running of the 1-day Summer School, traditionally held just before the conference. A social programme could include a trip to the Maritime Museum or a boat cruise dinner.
- It is important to hold the lectures / presentations at the same venue as the Exhibition. At Excel there is a 500 seat auditorium at £6k/day. Alternatively, flat break-out rooms seating 150 at £1.5k/day could be set up.
- The economics of running both types of meetings needs to be clarified. Micro attracts more 1-day visitors but has high stand prices. RMS rely heavily on the profits from Micro, while EMAG rely on the profits from the Exhibition to support the accrual fund. EMAG strongly needs to retain its identity with any co-located conference. The balance between benefits and practicalities needs to be understood.
- Knowing that EMAG2003 would have become an equipment free Exhibition would have made organisation a lot easier. Some companies, however, might not send technical experts to such an Exhibition in the future, so care is needed here, certainly to encourage technical representatives to attend the workshops.
- The running of themed EMAG 2-day meetings with overnight stay at a cheap University venue to hold the community was considered to help hold the community together. A strategic approach would be needed since there are too many conferences running. Also, there would still be problems for academics raising funds for student registrations in the present climate.
- IoP would out-source the running of an Exhibition (e.g. for Congress or Photon04 meetings). Would need to find out these costs. RMDB to liaise with RD and JBR to collate a list of support required from IoP for discussion at next committee meeting.
- Alternatively, could the Exhibition be run by RMS if EMAG continued as a separate conference series?
- It was re-iterated that Plan-A is to work with RMS to establish an associated EMAG conference in 2005. Plan-B would be to continue the EMAG conference series at a suitable University venue with a scaled down Exhibition.

Final Comment

The actions from these meetings were explored, but ultimately it was recognised that changing the bi-annual cycle of either meeting would lead to a loss of momentum that neither RMS nor EMAG was prepared to accept.

Thus, we now progress to plan B! This is to continue with the EMAG conference series in the time

honoured tradition of an academic conference series, but by necessity with a scaled down or out-sourced trade exhibition.

We would comment, however, that this has proved to be an extremely valuable discussion process at this time. It is clear that EMAG remains strongly identified and focused on its commitment to keeping the community together, whilst supporting the next generation of research workers. We are grateful to the support of the trade in sponsoring the EMAG meetings and look forwards to maintaining effective collaboration with the trade in the future, as alternative routes to provide student bursaries are explored. As ever, all further contributions to this debate are welcomed!

pdb / rmdb Jan 2004

MEETING REPORTS

Frontiers of Electron Microscopy in Materials Science, 5 – 10 October 2003

Claremont Resort and Spa

The Ninth Frontiers of Electron Microscopy in Materials Science Conference was held at the Claremont Resort and Spa in Berkeley. The organisers and chairmen of the meeting did not face an easy task in setting up a scientific program that beat the attraction of two heated outdoor swimming pools, sauna, gym and the spa facilities available at the Claremont, let alone the fantastic sunny late-summer weather in Berkeley. Their effort, however, was fully acknowledged and rewarded, as a nearly complete number of conference delegates filled the lecture theatre every day, in order to listen to the fascinating talks of some of the world's leading experts in electron microscopy.

Each day of the five-day program was divided into different morning and afternoon sessions, consisting of 30 – 45 minute talks and interrupted by coffee and lunch breaks, which gave the opportunity to more scientific discussion.

The morning session of the first day was concerned with 'AEM' and contained talks about 'Analytical TEM', 'Quantitative X-Ray Nanoanalysis', 'EEL Spectrum Calculation', 'ELNES' and 'EFTEM' by M. Sigle, M. Watanabe, J. Rehr, A. Scott and P. Midgley, respectively. This session gave a stimulating introduction to the latest advances in analytical methods and their recent achievements in the characterisation of materials, while the afternoon session on 'FIB' showed state-of-the-art techniques for sample preparation.

Part of my interest was focused on the research field of nanomaterials, which were covered on Thursday afternoon. The session, consisting of talks about 'Growth Kinetics of Metal/Oxide Nanocomposite' (A. Petford-Long), 'HRTEM and EFTEM of B-C-N Nanotubes' (D. Goldberg), 'Low-Voltage X-ray and EBSD Analysis of Nanoparticles' (J. Small), 'In-situ TEM/AFM of Nanomaterials' (P. Gai) and 'Thin Film Structures of Self-Assembled Metallic Nanoparticles' (C. Kiely), gave a fascinating insight into the preparation and analysis of purpose-tailored materials, made available by the latest advanced in synthetic and microscopic techniques.

My contribution to the conference consisted of a poster entitled '*LaI₂@(18,3)SWNT: The unprecedented structure of a LaI₂ crystal, encapsulated within a single-walled carbon nanotube*' and was presented on Tuesday night. The poster met an interested audience and initiated many thought-provoking discussions.

In summary, FEMMS 2003 enabled me to get a stimulating insight into the recent developments in electron microscopy and its application for the analysis of novel materials.

I would like to thank the Electron Microscopy and Analysis Group for its financial support for this conference.

*Dr Steffi Friedrichs, Cambridge
sponsored by EMAG bursary*

International Conference on Magnetism, Rome, Italy. 27th July – 1st August 2003.

A grant from the EMAG Bursary fund made it possible for me to attend the International Conference on Magnetism (ICM) in Rome. This year there were around 2000 participants from all continents making it the largest ICM to date.

Oral presentations at the conference covered a wide range of topics and attending these has given me a broader knowledge of other areas of magnetics research. At the conference I presented a poster containing recently obtained results investigating the phenomenon of exchange biasing in thin magnetic films. From this I received a great deal of feedback from other researchers and generated new ideas for experimental investigation.

By attending many oral and poster presentations and talking to other researchers I increased my knowledge of the many experimental techniques used to investigate magnetic properties. In the future I hope to be able to collaborate with other workers and use some of these techniques to supplement my own results.

On the whole I feel that attending ICM was a very beneficial experience and I am very grateful for the grant made by the EMAG bursary fund.

*Damien McGrouther, University of Glasgow
sponsored by EMAG bursary*

EMAG 2003

Although it seemed that most of the Glasgow SSP group was attending EMAG 2003 we all travelled separately and so I arrived in Oxford alone. Having never been there before, it took a map and several wrong turns before I arrived at the Examination Halls for registration. Although the first evening was spent mainly in the company of people from Glasgow, I soon discovered I knew a lot more people at the conference than I had originally thought and it was great to catch up with them all again.

The sessions were surprisingly more informal than I had expected. I generally found something of interest in each one, though there were several talks in the FIB sessions where I was scribbling like mad to take down all of the points I found useful, and still failing. Many of the posters were of real interest to my area of research, and the exhibitors friendly and informative.

It seemed I was never without someone else new to talk to, which was fantastic. The real pull in the exhibition area, though, had to be the lure of useless goodies to adorn my desk with when I got back, though the guys in my office don't seem particularly impressed so far.

I think the highlight of my time at EMAG was the conference dinner and not just because I won a prize (though it was a definite bonus!). The meal was lovely; we managed to coerce our waiter into giving us a constant supply of wine, but most of all, I enjoyed socialising with all the new people I'd met!

How to finish? So much to say, so little room...Picturesque surroundings, great food, friendly and talkative people, fascinating lectures, and freebies! What more could a student ask for?

*Claire Collins, Glasgow
EMAG 2003, student award winner*

ELECTRON MICROSCOPY AND ANALYSIS GROUP

COMMITTEE MEMBER REPORTS FROM MEETINGS

Nanoparticles and Nanostructured Materials: Implications for Health, Daresbury Laboratories, January 13/14th 2004.

This one day meeting organised through the RMS and co-sponsored by EMAG followed on from previous meetings in 1998 (at the Royal Society) and 2000 (a single session at MicroScience). The venue was chosen to showcase the EMAG sponsored SuperSTEM facility which is envisaged will make important contributions in the analysis of nanoparticulates in the future. It was clear from the outset that, despite the venue, the conference attracted nearly 60 delegates from an incredibly diverse range of fields and this stimulated very active discussion of both the physical and biological aspects of nanoparticulates in both pollution, scientific and medical applications. Clearly this is an area which will become increasingly significant both in terms of a negative and positive point of view – within which microscopy and analysis has a critical role to play in the future. Overall there was also considerable press interest which was organised through the Press Office of the Institute of Physics and involved a Press Briefing at the Science Media Centre at the Royal Institution with all major newspapers and TV/Radio present. Three press members actually attended the conference as well. The overall result consisted of articles in The Guardian, The Times, The Financial Times, Reuters, New Scientist as well as interviews on BBC Radio 4's Today Programme – if Harold Shipman hadn't decided to hang himself we might also have made it onto Channel 4 News! A veritable media frenzy and good publicity for microscopy.

The conference itself began with a set of tutorials by Peter Goodhew (on microscopy), David Jefferson (on nanoparticle structure) and Jonathan Grigg (on in-vivo sampling of airborne nanoparticulates). This was followed by a superb presentation on dietary aspects of nanoparticulates by Jonathan Powell. Denis Henshaw presented some extremely interesting results on ionisation of nanoparticulates close to power lines, while Ken Donaldson and Vyvyan Howard summarised some compelling evidence for the toxic effects and mobility of airborne nanoparticulates. Paul Borm then highlighted the possible issues regarding the medical use of nanoparticles for drug delivery systems. Sam Motherwell and Peter Weightmann discussed the crystallography of organic structures and their interaction with surfaces. Vicky Stone gave an impressive presentation on the origin of nanoparticle toxicity in cells, while Adam Curtis discussed some general aspects of biocompatibility of nanostructured surfaces. Finally Paul O'Brien summarised some aspects of commercial nanoparticle production and indicated the outlook for the future.

All in all a truly superb meeting with some very stimulating presentations which reflect a genuine desire amongst scientists to identify and investigate the biochemical effects of nanoparticulate systems. This is an area where analytical microscopy has a crucial role to play. A follow up meeting is planned in Edinburgh in 18-24 months time.

Rik Brydson, Co-organiser.

ELECTRON MICROSCOPY AND ANALYSIS GROUP

Obituary

Dr Tiesheng Rong

Tiesheng Rong arrived in the Department of Metallurgy at the University of Birmingham in October 1991. He was already a lecturer in what is now the University of Science and Technology, Beijing. He supervised me and Prof. Ray Smallman for his PhD. The external examiner for his PhD thesis and viva was Prof. Sir Peter Hirsch. Tiesheng published, I think, 7 or so papers on the work in his thesis in mainline journals, Acta Met., Phil. Mag. etc. He went on to work with Mike Loretto and Mark Aindow and was finally appointed as a University Research Fellow in Electron Microscopy. He was in the process of establishing a national standing for himself when illness so cruelly intervened.

Tiesheng was someone to whom his intellectual life meant a very great deal. It was a central part of his life. He was very deep thinking. I don't think I ever won an argument with Tiesheng. The closest I ever got, having spent half the previous night marshalling my forces and preparing my ground, was to elicit a grunt and a promise that he would go and think about it. It didn't make any difference in the end, though. One recent event I recall was when he had submitted a (single author) paper to a journal. He received a very short, but signed referee's report from Sir Alan Cottrell saying what an excellent little paper it was, and why. Tiesheng was so excited and proud that, totally uncharacteristically, he showed me the report.

'Uncharacteristically', because Tiesheng was not only an intellectual, he was also a very retiring and reserved person, which made him seem diffident on first acquaintance. Actually, he was anything but diffident, but I think this made him rather underappreciated. Not by people who knew him, though. All the students who passed through the electron microscope lab., both present and past, appreciated enormously his quiet, gentle, but deeply considered advice and help. Tiesheng was utterly reliable and dependable. If he said he'd do something, one knew it was 100% sure it would be done, and probably better done than one would oneself.

And so to the last year. I've said enough about Tiesheng for you to know that he conducted himself with a quiet dignity and courage throughout. At his request, as few people as possible were told of his indisposition. It was typical of him that when I had to fill in for him on a course in October, he had provided a complete Powerpoint presentation – all I had to do was stand up and mime. He was still giving me valuable advice by phone right up until medical issues made it impossible.

Tiesheng died on January 6th at the age of 46. I have lost a loyal colleague and a good friend and I shall miss him tremendously.

I.P. Jones
Dept of Metallurgy and Materials
University of Birmingham

FUTURE MEETINGS OF INTEREST

Forthcoming Institute of Physics and Royal Microscopical Society meetings of interest are briefly listed:

30 Mar - 01 Apr 2004
Materials Congress 2004

04 Apr - 07 Apr 2004
Condensed Matter and Materials Physics Conference 2004, Warwick

19 - 23 April 2004 **(RMS event)**
EM Spring School, Sheffield

06 - 08 July 2004 **(RMS event)**
Microscience 2004, EXCEL, London

22 - 27 August 2004
13th European Microscopy Congress, EMC 2004
University of Antwerp, RUCA campus, Belgium
<http://www.ruca.ua.ac.be/emc2004/index.htm>

06 - 09 Sep 2004
Photon04, Glasgow

EMC update

Dear colleagues,

First of all a very successful 2004 for all of you and hopefully we can meet in Antwerp in August of this year. Here's some news on the preparations for EMC 2004, including some deadline reminders.

- Abstract submission deadline: February 1, 2004 (as abstract submission is fully automated through our on-line procedure, we ask you to respect this deadline very strictly).
- Early registration deadline: February 1, 2004 (registration fees increase by 50 Euro (full delegate) and 25 Euro (students & technicians) after this date).
- European Microscopy Society (EMS) membership reduction of 20 Euro (till 1/2/04): check with your society to see if you are an EMS member or consult the 2003 EMS membership list available via the on-line registration procedure of EMC 2004 (via "Prices and Conditions" under "Registration" at www.emc2004.be).
- Invited speakers now listed on "Scientific Programme" part of website.
- Info on scholarships: over 10.000 Euro available for students and needing scientists as well as limited student lodging. Contact Eddie Wisse at eddie@wisse.be or consult the EMC 2004 website ("Scholarships" under "Registration" at www.emc2004.be). Registration and abstract submission need to be completed in order to be eligible for a scholarship.
- All info and regular updates available at www.emc2004.be.

We look forward to meeting you in Antwerp.
Nick Schryvers
President EMC 2004



ELECTRON MICROSCOPY AND ANALYSIS GROUP

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<http://www.mrs.org/meetings/>
- MSA:** Microscopy Society of America, 4 Barlows Landing Road, Suite 8, Pocasset,
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EMAG BURSARY APPLICATION FORM

PERSONAL DETAILS			
Name		Email	
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IoP/EMAG Member	Yes / No	IOP Number	Applying for Membership
Current Status	FT Student	Postdoc	Other - specify

CONFERENCE DETAILS		
Name of Meeting		
Date of Meeting		
Place of Meeting		
Title of Paper/Poster		
Has paper been accepted for presentation?	Yes	Don't know yet

SHORT COURSE DETAILS	
Title of Course	
Date of Course	
Place of Course	

FINANCIAL DETAILS		
Estimated Expenditure	Registration Fee Travel Costs Accommodation Subsistence	
	Total	£

Have you been promised a contribution towards your funding from any other sources?	Yes / No
If so, please specify the source and the amount they are prepared to contribute	

Have you received an EMAG bursary within the last 12 months?	Yes / No
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SIGNATURE	DATE
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Please send completed form and

- a letter of support from your academic supervisor and
- a copy of your paper abstract (if applicable)

to : Dr David McComb, Department of Materials, Imperial College London, Exhibition Road, London SW7 2AZ. (Email: d.mccomb@imperial.ac.uk)