

Institute *of* **Physics**

**Electron Microscopy and  
Analysis Group**

**Newsletter**

***June 2001***

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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## EMAG COMMITTEE - 2000/2001 SESSION

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**EMAG COMMITTEE - 2000/2001 SESSION/ contd.**

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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Dear EMAG Member,

## **EMAG 2001**

As is usual in odd numbered years the committee has devoted much time and effort recently in preparing for the biennial EMAG Conference which is taking place at the University of Dundee in the first week of September. The conference has the usual three day format preceded by the Advanced School and a SuperSTEM workshop. Over 160 abstracts have already been submitted and the programme details will be circulated shortly. Registration forms are available from Ms Jasmina Bolfek-Radovani at the IoP and details of the conference are on the Web at <http://www.iop.org/IOP/Confs/EMAG/>. We are looking forward to what looks to be an excellent meeting and hope as many group members as possible will be able to attend. I include a summary of the main events and details of costs.

### ***SuperSTEM First User Workshop (4 September 2001)***

The Conference will be preceded by a one-day workshop on the new UK SuperSTEM facility for aberration corrected imaging and ultra high resolution microanalysis.

### ***Advanced School (4 September 2001)***

The Conference will be preceded by a one-day Advanced School on "Quantitative Analysis in Scanning Probe and Electron Microscopies". Invited lecturers include H J Guentherodt, J. Titchmarsh, G. Tatlock and D. McComb.

### ***Trade Exhibition (5-7 September 2001)***

There will be a major trade exhibition in the West Park Conference Centre which will run both in parallel with the scientific sessions and have dedicated exhibition visiting times. More than 50 companies are expected to be displaying state-of-the-art microscopes and related products. The exhibition will be open to day visitors as well as Conference delegates.

### ***The Conference (5-7 September 2001)***

There will be 3 plenary lectures, 9 invited talks, ~ 50 other oral presentations and well over 100 posters on all aspects of electron and related microscopies. Manuscripts will be collected at the registration desk and peer reviewed by other delegates during the conference. All papers accepted will be included in the Proceedings volume to be published by IoPP.

### ***Social Events***

A number of social events will be held during the Conference:

- An Exhibitors Buffet has been arranged for the evening of Wednesday 5th September 2001 to follow the EMAG AGM.
- A Conference Dinner will be held in Glenturret Distillery on Thursday, 6th September 2001.

### ***Poster Prizes***

As at previous EMAG meetings there will be cash prizes awarded for the best poster presentations. There will be 4 prizes of £150 and these have been funded by donations from the following exhibitors: JEOL, Gatan, Nissei Sanyo (Hitachi), LEO and FEI. The posters will be judged on their scientific content, the quality of the microscopy and the effectiveness of the poster in conveying the results. Winners will be announced at the Conference Dinner.

### ***Cost***

Conference Registration fee (with proceedings, lunches and conference dinner)  
Members £220

Student Members	£100
Members of affiliated societies	£220
Non-members	£276
Advanced School Registration fee	£110

## COMMITTEE ELECTIONS

Since the December 2000 Newsletter there has been one change in the committee membership: Dr Paul Spellward resigned due to work pressures which has meant he has been unable to spare time for EMAG. In addition Dr Paul Midgley and Prof. Mark Rainforth are due to stand down for the next session. They deserve our thanks for the valuable contributions they have made to the running of the Group during their time on the committee. This means that there will be three vacancies for ordinary committee members in September. In order to try and maintain a balance between academics and industrial users and suppliers, the current committee has nominated the following for election:

Andy Burrows (University of Liverpool) – agreed,  
 Andrew Bleloch (University of Cambridge) - agreed,  
 Ciara Mullen (Hewlett Packard) – agreed.

On page 19 of this newsletter, we enclose a form for EMAG Committee nominations which should be filled in and returned if you wish to put either yourself or a colleague forward. If further nominations are received, there will be a postal ballot of all members in August. If not, those nominated by the committee will be declared elected at the AGM.

The deadline for nominations to the Committee is **1 August 2001**.

In the last newsletter we provided details about the new committee members. The final addition is Dr **Martin Strangwood** who gained his BA and PhD degrees from the Department of Materials Science and Metallurgy at Cambridge in the 1980s, specialising in the quantification of ferrous weldmetal microstructures in order to determine and model their transformation behaviour. After a three year spell in the Fracture and Materials Evaluation department at AEA Harwell, where he discovered the joys of TEM on non-magnetic foils, he moved to the School of Metallurgy and Materials at the University of Birmingham in 1990. At Birmingham he has continued his research interests in modelling phase transformations and microstructural development in a range of materials systems concentrating on ferrous, Ti-based and Al-based alloys, MMCs and intermetallics. This has required extensive microscopy (optical through to HR-TEM) coupled with quantification and thermodynamic / kinetic modelling. His major projects currently involve quantification and modelling of multi-component segregation in Al-based alloys and of carbo-nitride precipitate development in a range of ferrous alloys.

## PREVIOUS MEETINGS

A number of highly successful meetings have taken place since December, which have directly involved the EMAG committee. These include: the Nanoscale Physics and Technology Session at CMMP 2000 and Microscopy of Semiconducting Materials XII. Two further meetings have been held in which EMAG acted as co-sponsor namely: Advances In Focused Ion Beam Microscopy : FIB 2001 and a High Spatial Resolution Microanalysis session at The European Union of Geosciences XI meeting.

Reports on these meetings, together with others taking place over the busy summer and autumn period appear later in the Newsletter.

The committee has also been involved in the planning of several future meetings the details

of which you can read about in the newsletter. The venue and date for EMAG'2003 has still to be finalised but the committee has provisionally decided that it will be held at the University of Oxford in September 2003.

## **BURSARIES**

The Group account is currently very healthy and bursary uptake has been slow, members are reminded that EMAG bursaries are available for research students and younger postdocs (usually under 30 years of age) 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 cover 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 Paul Brown. Additionally each successful applicant must submit a short report on the meeting they attended to the Chairman of the Bursary Sub-Committee.

A number of bursaries valued at £150 each (an increased amount to reflect increased travel costs) have been allocated for EMAG 2001. Successful bursary applicants will be given free student registration to EMAG 2001 which is the cash equivalent of £100, plus the remainder as a bursary cheque for contribution towards travel and accommodation costs.

As it is expected that a significant proportion of the bursaries will be awarded for attendance

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at EMAG we are setting the following deadline for bursary applications.

Deadline for EMAG bursary applications: **29th June 2001.**

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

**Dr Rik Brydson**  
**EMAG Secretary/Treasurer**

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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## 2001 ANNUAL GENERAL MEETING

The Annual General Meeting of the Group will be held during the EMAG 2001 conference, at the University of Dundee on Wednesday 5 September 2001 at 17.30 hours.

The proposed Agenda is as follows:-

1. Minutes of the 2000 AGM (6 September 2000)
2. Matters arising from the Minutes
3. Honorary Secretary's report for the year 2000/2001
4. Financial Report
5. Results of the election of members to the EMAG Committee
6. SuperSTEM Facility
7. Discussion on membership/subscription to the European Microscopy Society
8. Any Other Business

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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## Minutes of the AGM held on 6 September 2000 at The Institute of Physics Headquarters at 12.30 pm

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**1. Minutes of the 1999 AGM (25 August 1999)**

The minutes were signed by the Chairman as a true record of the meeting.

**2. Matters arising from the minutes**

There were no matters arising from the minutes.

**3. Honorary Secretary's Report from 1999/2000**

Since the last AGM, the Group has organised, or contributed to, the following meetings:-

*CMMP 99 (20-22 December 1999 - University of Leicester)*

Dr Peter Nellist organised the symposia on "Nanoscale Physics and Technology" which ran over two sessions at the CMMP conference. This symposium has now become a regular (5<sup>th</sup> year) event at CMMP and was well attended.

*MICRO 2000 (11-13 April 2000 - London)*

A joint EMAG/RMS symposium on "Future Trends in Electron Microscopy" was held at MICRO on the opening day of the conference. The session was co organised by Drs John Hutchison and Chris Kiely. Five invited speakers covered a variety of topics although the attendance was a little disappointing due to a clash with the IOM congress.

*IOM Congress (12-14 April 2000 - Cirencester)*

Unfortunately this congress overlapped with the MICRO meeting and probably was responsible for the slightly low turn out at the MICRO symposium. EMAG sponsored a session on "Nanostructured materials" which was well attended. Around 950 delegates attended the congress.

*New Developments in FEG/TEM (3 July 2000 - Oxford)*

This meeting was sponsored by the RMS and EMAG and co-organised by John Hutchison and Paul Midgley. It was the second year that this meeting had been organised and brought together all the UK groups with FEGTEM instrument. An invited talk by Prof Manfred Ruhle opened the meeting. It is expected that this meeting could become a regular event to allow UK FEGTEM users to share their experiences with these instruments.

*Self-Organisation Phenomena of Nanoparticles (10 July 2000 - University of Liverpool)*

EMAG co-sponsored this meeting together with the Royal Society of Chemistry. This successful meeting had 4 invited speakers and was attended by 75 registered delegates.

Thanks are due to all those who have helped with the organisation of these meetings.

Future EMAG plans include :

- (i) A further symposium on "Nanoscale Physics and Technology" in CMMP 2000 on 18-21 December 2000 at the University of Bristol.
- (ii) Microscopy of Semiconducting Materials which will be held at The University of Oxford on the 25-29 of March 2001.
- (iii) Co sponsorship of a meeting on FIB techniques in spring 2000.

(iii) EMAG 2001 which will be held at The University of Dundee on 5-7 September 2001 and will be preceded by a one day Advanced School on Quantitative Analysis in Scanning and Electron Probe Microscopies on the 6<sup>th</sup> September.

#### 4. **Honorary Treasurer's Report**

At the end of September 1999 the balance in the EMAG group account was £6,298. A sum of £12000, the income from the EMAG 99 conference, was paid into the account in January 2000. Additionally the IoP provided £3768 to cover the costs of postage, printing, stationary, telephones and committee expenses.

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Sponsorship of invited speakers and poster prizes at CMMP 99, MICRO 2000, IOM Congress and the Nanoparticles meeting amounted to £1000.

Furthermore a contribution has been made to allow groups to meet to co-ordinate a proposal for an Advanced Microscopy Central Facility (SuperSTEM).

During the period October 1999 to July 2000, bursaries to a total value of £1750 were provided for 7 young people from a range of institutions to attend major overseas meetings.

A further £3600 has been committed to 36 young scientists in the form of bursaries to attend the EMAG 99 conference.

The balance of the Group Account after these outgoings is £16,953. The account is therefore in a very healthy state. It is intended to continue to support bursaries for students and post docs for overseas conferences.

Possible outgoings which are anticipated over the next two academic years include bursaries for MSM 2001 and EMAG 2001. As it is envisaged that travel costs for many people will be greater than usual for EMAG 2001. It is expected that the student bursary will therefore be increased for this meeting.

#### 5 **Results of the Election of Members to the EMAG Committee**

*Retired from the Committee:* Mrs J Mantell and Dr A Wilkinson  
Prof Kiely as Chairman  
Dr S McVitie as Secretary/Honourary Treasurer

*Stepping down:* Dr P Nellist and Dr W Richardson

*Appointed to the Committee:* Dr S McVitie as Chairman  
Dr RMD Brydson as Secretary/Honourary Treasurer

*Nominated by the Committee as Ordinary Members :*  
Dr RJ Shipley, Dr S Galloway, Dr A Petford-Long and Dr M Strangwood. There being as many nominations as places available, all were declared elected.

#### 6. **European Microscopy Society**

Prof Kiely outlined the background to the formation of the EMS which was effectively a successor to the old CESM (Community of European Societies for Microscopy). This was the brainchild of Peter Hawkes and was primarily concerned with choosing the EUREM conference and helping the local organising committee. Initially a website has been created and there is an intention to produce a journal in the future.

The membership is expected to be collected from national societies with a fee of 5 Euro per member. The main benefits would be reduced fees at EUREM conference and reduced subscription to the journal. A secretariat for the society would be needed and initial approaches had been made to the RMS.

At present around half the European Societies appeared to have signed up (the other half have not including the UK societies). A number of issues were raised by Prof Kiely for discussion: (i) is the EMS needed, (ii) who is responsible if EUREM makes a loss?, (iii) RMS reluctant to provide Secretariat with level of funding proposed, (iv) RMS and EMAG members in both societies. An open discussion was welcomed.

The general feeling from the audience was positive in terms of the purpose of the EMS. Prof Kiely suggested that the new EMAG chairman should proceed to contact the EMS and decide with the new committee on the next step.

## 7. AOB

### ***SuperSTEM***

At the EMAG'97 conference Prof LM Brown suggested the concept of the SuperSTEM and subsequently EMAG and RMS co-ordinated a committee to look into proposing such an instrument at Daresbury. This resulted in a JIF bid whose fate was held over until the decision was taken for the future of the Daresbury site. After the decision on Daresbury the JIF bid was turned down.

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After the Daresbury decision was made public an announcement was made of £25M of "regional aid" for the North West and bids were invited. The SuperSTEM bid was revamped comprising 12 universities with letters of support from 15 major companies, 2 learned societies and Daresbury/Nion. The bid was submitted on 27<sup>th</sup> July 2000. An announcement is expected sometime in September. If successful EMAG will be expected to play a major role within the new facility.

The meeting closed at 13.00.

**Dr. Stephen McVitie**  
**then EMAG Hon. Secretary / Treasurer**

September 2000

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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## FORTHCOMING EMAG RELATED MEETINGS

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### FEGTEM III

**Tuesday 3 July 2001, Department of Materials, Oxford University.**

The EMAG group is co-sponsoring this meeting along with the RMS, FEI UK Ltd, JEOL (UK) Ltd, LEO EM Inc, Gatan UK, TVIPS GmbH

The past three years have seen a remarkable growth in field-emission-gun transmission electron microscopy (FEGTEM) in the UK with more than ten instruments now in operation. Following the pattern of the two previous events, this meeting will focus both on novel instrumentation developments, and on applications to a wide range of problems in the life sciences and also in physical materials sciences. This time there will be a small number of invited speakers, including: Dr Steven Fuller (Oxford University), Dr Owen Saxton (Cambridge University), Dr Rik Brydson (Leeds University) representing these aspects of the subject.

The majority of the programme will be devoted to contributed papers. Contributions in all aspects of FEGTEM are now being sought. Abstracts should be sent as soon as possible to: [john.hutchison@materials.ox.ac.uk](mailto:john.hutchison@materials.ox.ac.uk) from whom further information may be obtained.

Further details are available from the organisers:

Dr John Hutchison, tel +44 (0)1865 273705, [john.hutchison@materials.ox.ac.uk](mailto:john.hutchison@materials.ox.ac.uk)

Dr Rafal Dunin-Borkowski, tel +44 (0)1223 334564, [red10@cam.ac.uk](mailto:red10@cam.ac.uk)

<http://www-em.materials.ox.ac.uk/events/fegtem.html>

Note this meeting is timed to precede immediately the one-day EFTEM meeting to be held on 4 July 2001, also in Oxford.

### DEVELOPMENTS IN ENERGY-FILTERED ELECTRON MICROSCOPY

**Wednesday 4 July 2001, Department of Materials, Oxford University**

The EMAG group is co-sponsoring this meeting along with the RMS, FEI UK Ltd, JEOL (UK) Ltd, LEO EM Inc, Gatan UK, TVIPS GmbH

The use of electron energy filters in analytical electron microscopy (EFTEM) is a relatively recent development that is proving to be an extremely powerful tool. In-column filters (e.g. so-called Aomega-filters@) and post-column filters (e.g. the AGIF@) represent different approaches which have their own advantages as well as experimental difficulties. This one-day meeting is designed to explore the current state of the art, both with regard to the instrumentation and also applications of EFTEM in life and physical sciences.

INVITED SPEAKERS include: Dr Bernd Feja (Tietz Video & Image Processing Systems GmbH) **Energy-filtered electron tomography**, Prof Joachim Mayer (Aachen University of Technology) **EFTEM - the state of the art and future trends**, Dr Paul Midgley (University of Cambridge) **EFTEM image series - taking elemental mapping into a new dimension**, Prof Michael Trendelenburg (German Cancer Research Center, DKFZ) **EFTEM in biomedicine & biotechnology: Recent advances in specific element mapping**.

Contributed presentations are now being sought. Abstracts of no more than 200 words should be sent by e-mail to [crispin.hetherington@materials.ox.ac.uk](mailto:crispin.hetherington@materials.ox.ac.uk).

**Further details are available from the organisers:**

Dr Crispin Hetherington, tel +44 (0)1865 273799, [crispin.hetherington@materials.ox.ac.uk](mailto:crispin.hetherington@materials.ox.ac.uk)

Dr Laurence Tetley, tel +44 (0)141 330 4431, [l.tetley@bio.gla.ac.uk](mailto:l.tetley@bio.gla.ac.uk)

**Note this meeting is timed to follow immediately the one-day FEGTEM meeting to be held on 3 July 2001, also in Oxford.**

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**FORTHCOMING EMAG RELATED MEETINGS /contd..**

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**MICROSCOPY OF CERAMICS**

Wednesday 21st November 2001

IoP Rutherford Conference Centre, 76 Portland Place, London.

The EMAG group is co-sponsoring this meeting along with the RMS

**MicroScience 2002**

Friday 9th – 11th July 2002

ExCel Exhibition Centre, London Docklands, U.K.

The traditional RMS MICRO conference has been given a new name, a new venue, an increased exhibition area and a substantially revamped scientific programme consisting of 6 sessions per day with Plenary and Tutorial speakers combined with both “wet” and “dry” workshops.

Themes of interest to EMAG members include:

*10<sup>th</sup> July*

Tomography (Paul Mummery, Manchester)

Digital Imaging (Patrick Echlin)

Image Quantification and Analysis (Patrick Echlin)

Low Voltage SEM (Patrick Echlin)

Scanning Probe Microscopy (Alistair Smith, Leeds)

*11<sup>th</sup> July*

Focussed Ion Beams (Beverley Inkson, Oxford)

Energy Filtered Imaging

SuperSTEM Second User Workshop

Variable Pressure SEM (Patrick Echlin)

EBSD (Val Randle, Swansea)

**Further details are available from the RMS**

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## ELECTRON MICROSCOPY AND ANALYSIS GROUP

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### REPORTS FROM MEETINGS

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#### **Nanoscale Physics and Technology Session at CMMP 2000, 19-21 December 2000 University of Bristol**

CMMP 2000 was held in Bristol University from 19 to 21 December 2000. There was one oral session on Nanoscale Physics and Technology (NPT) held on 21 December and an associated poster session held immediately after the oral session. We received 42 abstracts, nearly double the figure in 1999. However, the number of sessions were reduced from two to one, so only three were selected for oral presentation, these were:

Roger Bennett of University of Reading gave a talk entitled "Scanning tunnelling microscopy of metal nanoparticles grown on reconstructed TiO<sub>2</sub>(110) surfaces"

MDR Taylor of Nottingham University gave a talk on "SPM studies of Au colloids on Si"

Paul Godwin of Loughborough University gave a talk on theoretical simulations of "Structure and energetics of Fullerenes on silicon surfaces"

The two invited talks were given by:

Prof. D Fitzmaurice of University College of Dublin, "Programmed nanoparticle assembly"

Prof. RE Palmer of University of Birmingham, "Scanning probe energy loss spectroscopy"

An estimated 70 people attended the oral session.

This year's poster sessions were organised slightly differently. There was not a poster session under the banner "Nanoscale Physics and Technology", instead there was one called "Artificially Structured Materials" which consisted of mainly contributions to NPT. A total of 44 posters were presented at this poster session. I judged the posters and selected two posters (student posters) for prizes. The poster by E Dedman of Oxford on "Photonic crystals for the visible spectrum by holographic lithography" was selected as the best poster from all presented in the "Artificially Structured Materials session" and was put forward to the final CMMP poster competition. The other poster by S Pretontep of University of Birmingham on "Implantation and pinning of size-selected Ag nanoclusters at graphite surfaces" was judged as the best poster within the nanotechnology domain and was recommended to receive the EMAG poster prize.

I have expressed concern that there was no NPT poster session at the CMMP divisional meeting held on 19 December 2000. I would suggest that whoever becomes the organiser of the NPT symposium for next CMMP, asks the local organiser to put two oral sessions on NPT based on the level of interest from the community.

**Quanmin Guo**  
(Organiser)

#### **Microscopy of Semiconducting Materials XII 25-29 March 2001, University of Oxford**

180 delegates (70% from overseas) attended MSM-XII which was co-sponsored by EMAG with the RMS. As ever, the traditional high level of scientific content was maintained, covering topical issues related to those usual suspects, SiGe, GaN, InGaAs, II-VIs etc, with

significant advances in the profiling of quantum dots (QDs). Of particular note, Browning (Illinois) demonstrated the application of EELS/HAADF in FEGSTEM to the characterisation of CdSe QDs and GaN dislocation cores. Cockayne (Oxford) authoritatively reviewed techniques to distinguish composition and shape effects in SiGe QDs, in view of competing models from strain relief and defect introduction (it was particular pleasing to see confident use of the blackboard in this day and age of powerpoint presentations and audio-visual extravaganzas). Walther (Bonn) elegantly extended the QD formation story to islanding transitions in InGaAs/GaAs. Ernst (Stuttgart) advanced the story still further with a

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### REPORTS FROM MEETINGS /contd..

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consideration of Ge/Si QD self-alignment for quantum effect devices, while Ross (IBM) presented videos of bimodal SiGe QD distributions, Ostwald ripening and shape changes at certain critical volumes. Conference then developed the traditional themes of epitaxial growth, quantum wells, ordering and device microscopy. Hull (Virginia) argued the case for surface oxide influencing threading dislocation velocity in SiGe/Si, Norman (NREL) described the recent development of BGaInAs for solar cells and Sharma (Cambridge) demonstrated the importance of control of growth interrupts in order to limit alloying in InGaN/GaN multiple quantum well structures. Romano's (Xerox) talk on polarity inversions in highly Mg-doped GaN was particularly interesting, while Albrecht (Erlangen) continues to make remarkable advances with the powerful technique of CL in TEM as applied to InGaN. Further, Norman (Toshiba) amusingly demonstrated how CL in SEM could achieve ~ 20nm spatial resolution for a designed Si-doped GaAs/AIAs structure. Additional themes concerned aspects of processing, mechanisms of doping contrast formation, concluding again in the traditional fashion with applications of scanning probe microscopy. The continued dedication of Tony Cullis (Sheffield), John Hutchison (Oxford) and the RMS conference team is to be applauded.

**Paul D Brown**  
(Co-organizer)

#### **Advances In Focused Ion Beam Microscopy : FIB 2001, 30th March 2001 Department of Materials, Oxford University, U.K.**

Imagine a pen which can write lines less than a hundredth the width of a human hair, and a 'nano'-knife which can cut a hair into thousands of pieces. This are just some of the mighty powers of a highly focused beam of ions, which have been harnessed in the latest generation of focused ion beam (FIB) microscopes.

Although they have been around in development for decades, only recently have FIB microscopes become readily accessible to many university and industrial users (although prices are still steep at ~500k upwards). To bring together the growing band of FIB-bers and people interested in learning how to use the technique, the Royal Microscopical Society (RMS) ran on 31st March 2001 a one-day meeting **FIB2001 : Advances in Focused Ion Beam Microscopy** which was co-sponsored by EMAG.

The rapidly growing interest in FIB microscopy was reflected in the large number of attendees at FIB2001, with over 80 coming from 13 different countries. The programme provided a very high standard of talks and posters covering areas including the fabrication, modification and failure analysis of semiconductor and functional devices, FIB preparation of TEM samples, FIB fabrication for MEMS and nanotechnology, and 3D nanoanalysis methods. The overview for new users, and the cross-fertilization of ideas from scientists working in different application and materials areas were particularly useful outcomes of the meeting.

The RMS and organisers of FIB2001 are very grateful for the generous support provided by EMAG/IOP, FEI Co. Ltd. and Hitachi, which enabled the invitation of some excellent overseas invited speakers. If anybody is interested in receiving further information about upcoming FIB meetings and joining a new UK FIB Network next year, then please contact Dr. B. Inkson via [beverley.inkson@materials.ox.ac.uk](mailto:beverley.inkson@materials.ox.ac.uk).

**High Spatial Resolution Microanalysis in the Transmission Electron Microscope and  
Related Techniques: Applications for the Geosciences**  
**The European Union of Geosciences XI meeting, 8<sup>th</sup> – 12<sup>th</sup> April 2001, Strasbourg,  
France.**

This standalone session was held at EUG XI meeting and was sponsored by EMAG and RMS and was convened by Rik Brydson, Geoff Lloyd and myself (Clair Calvert).

This symposium represented an excellent opportunity to demonstrate to the European geological community the range and applications of TEM based analytical techniques currently available.

The keynote speakers were; Ferdinand Hofer, who gave an excellent talk on the applications of EFTEM, with emphasis on elemental mapping, in the analysis of minerals, Ute Golla, who presented a fascinating talk on TEM analysis of exsolution textures in spinel type minerals using EDX, EELS and valence state mapping, and finally Peter van Aken who gave, from my point of view, the most interesting talk of the session on the comparison of current methods for

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**REPORTS FROM MEETINGS /contd..**

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the quantification of  $Fe^{3+}/\Sigma Fe$ . Other talks included; an EDX detection drift correction method (Falko Langenhorst), EELS and HRTEM analysis of the breakdown products of feldspars (Roland Hellman), quantification of  $Fe^{3+}/\Sigma Fe$  in mixed valence minerals, using a mathematical fit approach (Clair Calvert) and finally, despite having his overheads "relocated" a discussion on the EELS of micas presented on hand written overheads (Kenneth Livi).

The session was well attended (up to 50 maximum) and produced some lively discussion, especially on the subject of academic espionage!

Thanks to an EMAG bursary I was offered the opportunity to take part in what I believe was the first symposium on EELS to be predominantly aimed at geologists and it provided me with an number of excellent contacts around Europe. I hope that we will be able to repeat this session again, either at EUG XII or at one of the Goldschmidt conferences and further expand the use of TEM based analysis within the geosciences.

Clair Calvert  
(Contributor and Co-organiser)

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# ELECTRON MICROSCOPY AND ANALYSIS GROUP

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## FUTURE MEETINGS OF INTEREST

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Institute of Physics meetings and meetings which are closely connected with EMAG (via sponsorship or organisation) are in bold type.

### 2001

3 July  
FEGTEM III  
Department of Materials, Oxford University.  
RMS  
Contact: [john.hutchison@materials.ox.ac.uk](mailto:john.hutchison@materials.ox.ac.uk)

4 July  
Developments In Energy-Filtered Electron Microscopy  
Department of Materials, Oxford University.  
RMS  
Contact: [crispin.hetherington@materials.ox.ac.uk](mailto:crispin.hetherington@materials.ox.ac.uk)

5-9 August  
Microscopy & Microanalysis 2001  
Long Beach, CA, USA  
Mary Rebedeau, Chicago: Fax +1 708 361 6166  
[msa@tradeshownet.com](mailto:msa@tradeshownet.com)  
website: [msa.microscopy.com](http://msa.microscopy.com)

4 September  
**SuperSTEM 1<sup>st</sup> User Workshop**  
Dundee, Scotland  
IoP  
Contact: [a.beckerl@liv.ac.uk](mailto:a.beckerl@liv.ac.uk)

4 September  
**Advanced School for EMAG 2001**  
**“Quantitative Analysis in Scanning Probe and Electron Microscopy”**  
Dundee, Scotland  
IoP

5-7 September  
**EMAG 2001**  
Dundee, Scotland  
IoP

3 October  
Quantitative Measurement of Microstructure QMM2001  
National Physical Laboratories, London  
RMS

21 November 2001-05-14  
**Microscopy of Ceramics**  
IoP London  
IoP/RMS  
Organizer: Mark Rainforth

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## FUTURE MEETINGS OF INTEREST /contd..

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### 2002

24 - 26 March  
Microscopy of Composite Materials VI  
Oxford  
RMS

7-11 April  
EPS CMD19 CMMP as part of the IoP Congress  
EMAG sponsored Nanoscale Science and Technology Symposium  
Brighton Conference Centre

9 -11 April  
Institute of Materials Congress  
London  
IOM

9 - 11 July  
**MicroScience 2002** – Microscopy at Life Science/ Physical Science Interface  
ExCel exhibition Centre, London Docklands  
RMS

1 - 6 September  
International Congress of Electron Microscopy ICEMXV 2002  
Durban, South Africa  
<http://www.icem15.com>

### Contact Points

**IoP:** Institute of Physics, Conference Dept., 76 Portland Place, London, W1N 4AA.  
Tel: +44 171 470 4800, Fax: +44 171 470 4900  
Email: [conferences@iop.org](mailto:conferences@iop.org)  
<http://www.iop.org/IOP/Confs/>

**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, 4 Barlows Landing Road, Suite 8, Pocasset,  
MA 02559, USA.  
Tel: +1 508 563 1155, Fax: +1 508 563 1211  
<http://www.MSA.microscopy.com/>

**RMS:** Royal Microscopical Society, 37/38 St. Clements, Oxford, OX4 1AJ.  
Tel: +44 1865 248 768 Fax: +44 1865 791 237  
Email: [meetings@rms.org.uk](mailto:meetings@rms.org.uk) <http://www.rms.org.uk/events/>

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## ELECTRON MICROSCOPY AND ANALYSIS GROUP

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### NOMINATIONS for ELECTION to the EMAG COMMITTEE

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In 2001 we need to replace three Ordinary Members of the Committee. You are therefore invited to nominate candidates for the three Committee Members. Both the Proposer and Secunder, who must be members of the Group, should complete the relevant sections of this form and the approval of the Nominee, who must be a member (or a Subscriber) of the Institute, should be signified by his/her signature. No person may propose or second more than one Nomination for any particular post.

Nominations should be sent directly to the Honorary Secretary to arrive before the deadline of 1st August 2001. The Group Committee may make further Nominations before the postal ballot forms are circulated in August.

**COMMITTEE POST:** \_\_\_\_\_

Nominee : Name \_\_\_\_\_ (Signature \_\_\_\_\_)  
IoP Membership Grade \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposer: Name \_\_\_\_\_ (Signature \_\_\_\_\_)  
IoP Membership Grade \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Secunder: Name \_\_\_\_\_ (Signature \_\_\_\_\_)  
IoP Membership Grade \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

When completed, this form should be sent to:

Dr Rik Brydson,  
The Honorary Secretary - EMAG  
c/o Department of Materials,  
The University of Leeds,  
Leeds,  
West Yorkshire LS2 9JT.

## EMAG BURSARY APPLICATION FORM

<b>PERSONAL DETAILS</b>			
<b>Name</b>		<b>Email</b>	
<b>Address</b>			
<b>Title</b>		<b>Age</b>	
<b>IoP/EMAG Member</b>	Yes	No	Applying for Membership
<b>Current Status</b>	FT Student	Postdoc	Other - specify

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

<b>SHORT COURSE DETAILS</b>	
<b>Title of Course</b>	
<b>Date of Course</b>	
<b>Place of Course</b>	

<b>FINANCIAL DETAILS</b>		
<b>Estimated Expenditure</b>	<b>Registration Fee</b>	
	<b>Travel Costs</b>	
	<b>Accommodation</b>	
	<b>Subsistence</b>	
	<b>Total</b>	<b>£</b>

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

<b>Have you received an EMAG bursary within the last 12 months?</b>	Yes / No
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<b>SIGNATURE</b>		<b>DATE</b>	
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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. PD Brown, School of Mechanical, Materials, Manufacturing Engineering and Management, University of Nottingham, Nottingham NG7 2RD.