

The 13th European Microscopy Congress, EMC 2004, successor of the quadrennial EUREM series, was held from 22 till 27 August in Antwerp, Belgium. Although it is too early for a detailed report on numbers and figures of EMC 2004, we believe that it is safe to say that the meeting was a great success with around 1.000 scientific delegates from over 50 different countries and 300 company representatives. The positive reflections that will stick to this congress in the delegate's memories will have a framework set by a wonderful environment. The right spirit was there – from the welcome reception in the university sporting facility till the farewell drink in the cafeteria.



The central scientific programme consisted of 42 regular sessions (of which three were split into two parts because of the large number of contributions), two round table discussions, three plenary lectures to start the day on Tuesday, Wednesday and Thursday, and five special interest lectures at lunch time (for titles please see www.emc2004.be or the July issue of this publication). This scientific programme was preceded by three satellite workshops on Saturday and 5 Sunday courses. On Monday morning, the two FEI-EMA prize lectures were presented during the opening session. The entire field was divided into three main categories, following the common lines of "Instrumentation & Methodology", "Materials Sciences" and "Life Sciences", a division which also inspired the topics of the plenary and special interest lectures. Both were typically attended by around 500 delegates, while some of the regular sessions attracted over 150 delegates. The two hour poster sessions with around 125 posters being discussed each day (with a total of around 500) were very well attended and created a very exciting atmosphere in close proximity to the main exhibition hall. In total, about 850 scientific contributions were presented. Two page abstracts of these contributions are published in three volumes of printed proceedings as well as on a single CD-ROM (there are still a few printed proceedings as well as CD-ROM copies available, so if you are interested

EMC 2004 Report



Fig. 1: Town hall of Antwerp



Fig. 2: Lecture Hall

in buying an extra copy or another volume (50 € per printed volume, 15 € for the CD-ROM, incl. postal costs), do contact us at information@emc2004.be).

Materials, Life Sciences & Instrumentation

Similar to the last conferences, the materials science contributions outnumbered the life sciences and the instrumentation abstracts. The 16 sessions with mostly only two parallel sessions were highly attended. Because of the growing, but unavoidable overlap between some instrumentation sessions and materials science sessions (e.g. *Quantitative HRTEM and STEM* and *Interface characterisation* or *Nanostructured materials and nano-lab*) we decided to have the highly attended IM sessions in the beginning of the week and the highly attended MS sessions at the end of the

week. This made that even on the last day the number of scientists was still very high. Highly attended sessions (above average or above expectation) were *Interface characterisation*, *Nanostructured materials and nano-lab*, *Si-based semiconductors*, *Alloys and intermetallics*, *Spectroscopy in materials science*. The session *Microscopy in art & archaeology* also received a surprisingly large attention.

The level of the contributions (oral as well as posters) was very high and the fact that lecture halls, exhibition hall and poster hall were all geographically very close to each other had a large impact on the synergy of the meeting. There was a strong intermixing of materials scientists with a different background (physicists, chemists, materials scientists, archaeologists).

With about 230 communications spread over 15 sessions and one round table, the life sciences part of the congress scored pretty well on the scale of success. However, this is only part of the analysis. Even more important than quantity is quality. In this respect, the organisers as well as the delegates were more than pleased. Of course the number of offered papers mirrors the popularity of particular aspects of research today. Notwithstanding these differences in popularity the scientific level was high throughout all sessions, and due to this quality, the smaller sessions also attracted a numerous audience. The life sciences share of the plenary lectures and of the special interest lectures had the good mix of entertaining a broad audience and keeping a high informative and scientific standard.

As could be judged from the large number of contributions in instrumenta-



Fig. 3: Nick Schryvers and Jose Carrascosa

tion and methodology and the well-attended tutorials, the number of new developments is still numerous. Many of the new developments are still in the field of electron microscopy

such as correctors, filters, monochromators, new detectors and low-voltage SEM. Especially the possibility of obtaining spectroscopic information on the nanoscale is a very strong asset as is clear from the numerous contributions on EELS/EFTEM. We also see a tendency to integrate different tools in the same instrument under full computer control and without sacrificing performance, so as to provide a large versatility in experimental settings and combine all the information. All this is greatly facilitated by new specimen preparation techniques such as focused ion beams, although at this point a long way still has to be gone.

Correctors and wave reconstruction techniques have pushed the resolution of the electron microscope to below one Angstrom, which is not to be regarded as a gradual improvement in the performance but more as a quantum leap. Indeed it now becomes possible to resolve individual atoms and thus quantitatively refine atomic structures. We also observe a growing tendency towards quantitative microscopy and to compare the data with first-principle calculations. Even the more mature techniques such as convergent beam diffraction and electron holography have turned into flexible and reliable quantitative tools.

This evolution will shift the role of electron microscopy from observing to understanding and predicting.

Pioneered in the life sciences, electron tomography is now getting widespread use also in materials science both in analytical tomography and structural tomography approaching atomic resolution.

The field of optical microscopy also has, after a long time of gradual improvements, recently shown a boost of

novel imaging modalities such as new fluorescence techniques, video-rate confocal microscopy and multidimensional 2-photon microscopy. They have opened new windows through which the functioning of molecules, living cells and organs can be visualised, and have revealed many unexpected phenomena. The use of dynamic cell imaging and measuring techniques, affordable through the use of high speed and high sensitive detectors, now opens a new field in cell biology named cytomics: the science of cell-based analyses that integrates genomics and proteomics with the dynamic function of cells and tissues.

Exhibition

In parallel to the scientific programme, 24 technical lectures were presented by representatives from exhibiting companies. In total, 64 companies using around 800 m² of floor space presented their newest equipment and services including several advanced TEMs, scanning and optical microscopes, sample preparation equipment, image processing methods etc. to the scientific community. The wealth of equipment exhibited appealed very much to the delegates and the activities of the companies present competed successfully with the forum of science in the lecture rooms. Some of the companies also hosted booth parties on site or evening activities downtown.

During the week, several national and international societies, including the European Microscopy Society, held their general assembly and board meeting. With the support of EMS, around 50 delegates received partial scholarships as waived registration and student housing, which allowed several young scientists and scientists in need of special financial aid to attend EMC 2004.

The organisers like to thank all delegates and exhibitors for their appreciation and we are very pleased with all the supporting reactions we received. In the near future, the website www.emc2004.be will be updated with some particular data as well as pictures taken during the different events of EMC 2004.

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