



MSSA

NEWSLETTER / NUUSBRIEF

NUUSBRIEF VAN DIE MIKROSKOPIEVEREENIGING

VAN SUIDELIKE AFRIKA

NEWSLETTER OF THE MICROSCOPY SOCIETY

OF SOUTHERN AFRICA

Volume 22, number 3, September 2006

EDITORIAL

Many folk will be preparing presentations for an outing to 'The Bay' and the NMMU in Port Elizabeth where, I am sure, Jan Neethling will offer us all a memorable event. Remember that we thereafter try our 'timing and frequency' experiment with regard to MSSA Conferences and there will *not* be an MSSA Conference in 2007 - the next event will be in mid 2008 in Botswana. A break with tradition, I won't know what to do with all that time in December! But change is useful, shakes us out of the rut.

The first winner of the ALS/JEOL award to students from previously disadvantaged groups was **Abram Chawanji** from Rhodes. Read his report on his prizewinning trip to MicroScience on the back cover.

I had the very great pleasure of attending the **Microscience 2006 Exhibition and Conference** in London as an invited speaker. It is conference on a grand scale, certainly in terms of the exhibition, and there are lessons we can learn there. Amongst the many positives were the following;

- A full programme of *talks at four full time venues on the exhibition floor* where manufacturer's representatives presented talks on products and innovations.
- An area known as the 'Learning Zone' fully equipped with a range of SEM's and more LM's than I could count,

manned by experts where you could go and ask any question you like about microscopy or the products.

- There were SEM's everywhere on commercial stands, the very latest technology from all suppliers - with very full demo slots over the whole four day period.
- The range and number of 'names' available was staggering - every luminary of the RMS and every British author of a microscopy book seemed to be there - and, mostly, very approachable folk.

Frankly, I found the lecture venues of the Excel Exhibition Centre to be very second-rate - the emphasis of this venue is definitely on exhibition. The lecture rooms were stuck away at the back, accessed by narrow, congested staircases and rooms had low ceilings and poor seating arrangements. For my lecture on African applications of ESEM technology I was fortunate to have a most appreciative and 'standing room only' crowd.

At the MicroScience Conferences there is a strong emphasis on involving the lay public and the youth in the exhibition. As such, entrance to the exhibition is free and unrestricted and you only pay a registration fee if you attend the lecture programme.

Tony Bruton, Editor MSSA News

TRADE NEWS

VACANCIES

Carl Zeiss (Pty) Ltd. currently has a **vacancy in Johannesburg for a sales representative** in the newly integrated NTS (Nano Technology Systems) Division.

Candidates should have a diploma / degree in physical science / mineralogy or metallurgy and be familiar with electron / ion beam imaging and energy dispersive x-ray techniques. Knowledge of optical microscopy and image analysis will be an advantage.

Interested applicants should forward a detailed CV to Human Resources, Carl Zeiss (Pty) Ltd, P.O. Box 3003, Randburg 2125 for the attention of Claudia Nicholl or e-mail them to nicholl@zeiss.co.za

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I have funding for a **full time post in the EM Unit** of the Pathology Division of the NIOH (part of the NHLS). The candidate would be expected to register for an MSc or PhD at Wits. The project involves the examination of lung tissue for the presence of asbestos fibres. Full supervision and training is available. A basic knowledge of SEM and TEM is desirable. The candidate would be working virtually full time on the higher degree. If any of your members are interested or have students that might be potential candidates, they can contact me directly. The money is available for the post and the successful candidate can start immediately.

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Pathology, NIOH  
PO Box 4788, Johannesburg 2000  
Tel +27 11 712 6473, Fax +27 11 712 6450  
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### ACQUISITION OF COMPANY

Carl Zeiss SMT acquires ALIS Corporation Start-up company for Helium-based microscopy to extend Carl Zeiss SMT's

technology portfolio. Oberkochen/Peabody, July 19, 2006. Carl Zeiss SMT has acquired 100% of the shares of ALIS Corporation, Peabody, USA for its Nano Technology Systems Division (NTS). ALIS newly developed helium ion microscopy technology will add an important building block to Carl Zeiss SMTs existing portfolio of charged-particle technologies aimed at nanoscale imaging, structuring and analysis applications. The acquisition of ALIS Corporation further expands Carl Zeiss SMTs global leadership position as enabler for industrial nanotechnology solutions and academic research.

Dr. Dirk Stenkamp, Managing Director of Carl Zeiss NTS, states: "The Helium ion microscopy technology developed by ALIS complements our market leading scanning electron microscopy (SEM) technology and will be a key element of our future technology roadmap. It offers unrivalled opportunities for sub-nanometer imaging, depth-of-focus capabilities and new image contrast features. This will enable our customers in semiconductor manufacturing, materials and life science applications to further push existing technical boundaries and to meet their roadmap requirements beyond the current decade".

ALIS Corporation, founded in 2005 by Bill Ward, Nick Economou and Dave Hunter, is a developer of next-generation, atomic-level helium ion microscopy. This technology targets at substantially improved resolution and faster image acquisition over existing electron microscopes. The company currently employs 36 scientists and engineers.

Carl Zeiss SMT has acquired 100% of the shares of ALIS Corporation from a group of financial sponsors and strategic investors. CIBC World Markets acted as advisor to ALIS Corporation. ALIS will be closely integrated within the Nanotechnology Systems Division of Carl Zeiss SMT. The acquisition is expected to close during the third quarter of 2006.

For more information on Helium based microscopy visit ALIS at <http://www.aliscorporation.com>

## INVITATION FROM THE MSSA TRUST

The **Microscopy Society of Southern Africa (MSSA) Trust** wishes to promote microscopy in Southern Africa and improve the microscopy skills of people. As such, it invites applications for funding towards the following areas:

- 1) promoting microscopy and science careers in Southern Africa,
- 2) towards the organization of microscopy based workshops or schools in Southern Africa,
- 3) attendance at microscopy conferences or workshops in 2007,
- 4) promoting microscopy to learners in schools.

Applications must be by **e-mail only** to the Secretary of the Trust, Alan Hall at [alan.hall@up.ac.za](mailto:alan.hall@up.ac.za)

**DEADLINE** for applications is **Monday 13 November 2006**.

Applications must contain all information considered relevant including:

- 1) letter of support from the head of department or supervisor,
- 2) CV of the person or persons involved,
- 3) details of the conference, workshop, event or project planned,
- 4) specific benefits to be obtained by the person(s),
- 5) detailed budget,
- 6) details of applications made or to be made to other funding sources and their response etc.

**NOTE: Applications not containing all the required information and good motivations will not be considered. The Trust will not chase any missing information.**

It is normally expected that that the Trust will only partially fund the total budget.

Hopefully all applicants will be notified by mid January 2007 of the decision of the Trust. Successful applicants will be required to provide proof of attendance at the funded event or audited accounts when organizing events etc., write a detailed article on their attendance or event for the MSSA Newsletter. A presentation on what was learned/gained is expected at the scientific sessions or Technical Forum of the following MSSA conference.

**Mike Witcomb**  
**Chairperson, MSSA Trust**

## Response to an issue raised in the previous MSSA Newsletter

In the last issue of the MSSA Newsletter, distributed in June 2006, the editor speculated that there were three important issues currently occupying the minds of the EM Community in Southern Africa. One of those issues was the **allocation and funding of capital equipment**. A challenging letter penned by Wojceith of Ithemba Centre was published in that newsletter. This is a reply written by Mike Witcomb and enthusiastically supported by at least Japie Engelbrecht who wrote a similar reply shortly afterwards:

*'Dr Wojcieth from Ithemba LABS stated in the latest MSSA Newsletter that he believed that "access to expensive and unique equipment is better at national centers than at universities since*

*1) At national centers the equipment is free of charge with the help of trained personnel. In contrast, universities require payment for the use of their equipment.*

*2) Users are encouraged to apply for NRF mobility grants to cover travel expenses."*

*Then he went on to say about there being cheap accommodation etc.*

*I feel that I should speak to this from my own manager point of view and my own Unit's perspective.*

*I have today placed an order for some R18 million for microscopes with part NRF funding. NRF require a business plan for this equipment which means that the operational yearly running cost of around R1 million a year must be accounted for, the project viable and all financial and operating details reported fully to them each year. NRF allow for charging of NRF funded people to use such equipment. They also give mobility grants to use such equipment. They recognise that such equipment does not run even on the thin air of the Highveld! Ideally you also take into*

*account depreciation of the equipment which becomes frightening.*

*The governments subsidy to tertiary institutions has declined yearly and must be at about 60% now. That is, the University has to find 40% at least. It costs many hundreds of millions to run a University. Money has to come from somewhere.*

*I am pleased and happy for the Ithemba that it gets all the money from government that it needs so that it does not have to charge users. The reality elsewhere can be different, such as at the CSIR, also a national lab. I know how much we have paid their SEM facility - we got a mobility grant and have also paid "real money" (We have been happy with what we received.) I could quote charges made by other national labs.*

*As for "outside users" that use my facility, some we charge (it is always a partial charge), some we do not, depends on circumstances, collaborative research etc. I did 3 days work on the CM200 for another University recently and charged nothing. I try not to turn people away, but if I do it is usually that we have insufficient available time or as a result of lack of staff. We do have trained personnel (but not enough due to continued staff funding cuts - Research Office staff funding has been reduced R500,000 this year - we fall under Research Office). Internally within Wits, effectively we only charge for consumables. That will have to change for the new equipment, a nominal charge will be levied to tertiary institutional users for the FEG analytical FIBSEM.*

*Long may Ithemba be in a position to not charge users and run free workshops, how I truly envy them. I encourage them to maintain this position as long as they can.*

**Mike Witcomb,  
Electron Microscope Unit, Wits**

## Obituary -Frank Reginald Nunes Nabarro 1916 -- 2006

One of South Africa's greatest scientists died in Johannesburg on 20 July. A world-renowned physicist, he was one of the pioneers of solid-state physics, which underlies modern technology. Despite his age, he remained actively involved in research, both locally and internationally.

Frank Reginald Nunes Nabarro was born on 7 March 1916 in England. In 1935 he obtained a first-class honours degree in mathematics from New College, Oxford University, followed by a first in physics in 1937 and another in mathematics in 1938. At the University of Bristol his work under Professor N.F. Mott, a future Nobel Laureate in physics, earned him the Oxford degree of B.Sc. (then equivalent to an M.Sc. anywhere else). This was followed by an M.A. in 1945.

When World War II broke out he was involved in the aerial defence of London and then joined the Army Operational Research Group, headed by then Brigadier B.F.J. Schonland. His work on explosive effects of shells resulted in his being made a member of the Order of the British Empire.

From 1945 to 1949 Nabarro was a research fellow at the University of Bristol and then became a lecturer in metallurgy at the University of Birmingham, for which the university awarded him a D.Sc. in 1953. In this year he was invited to become professor of physics and head of the physics department at the University of the Witwatersrand, which needed to be strengthened and directed towards the physics of solids in order to co-operate more fruitfully with industry on the Witwatersrand. Nabarro built the physics department into one of the strongest in the country and made it a leader in metallurgical research. His own research centered on 'creep', or gradual metal failure under imposed stress, and crystal dislocations, which results in the deformation of metals.

Guided by the work of Zener, he was the first to propose that the contribution of grain boundaries to the flow stress was inversely proportional to the square root of the grain size. He predicted the existence and magnitude of diffusional creep and corrected Peierls's estimate of the stress required to move a dislocation through a perfect lattice. He furthermore showed how theoretical and experimental estimates of this stress could be reconciled. He later turned his attention to creep-resistant materials, in particular to the mechanism of rafting in superalloys, and more recently contributed to the theory of dislocation patterning.

During his period as Deputy Vice-Chancellor of the University of the Witwatersrand, his portfolio was described as "academic". This meant that he was responsible for academic staffing and planning, the organization of Senate business, and so on. The then Vice-Chancellor, Prof. D.J. du Plessis, was already planning, from 1978 onwards, the "transformation" of the university which would occur once the government allowed it to enroll

students of all races. He set up three teams, to consider the academic implications, the finding of land to accommodate a large influx of students, and the financial aspects. Professor Nabarro was responsible for the first team. He had to estimate how many new students the university could expect and when, how much accommodation they would need, and how this large number of students could move efficiently from one class to another. This "Academic Plan" was the first to be drawn up by any South African university. Nabarro's team predicted that half of the university's student body would be "black" by the year 2000. This figure was already reached by 1997. They also realized that this influx of new students would suffer from poor education, with particular problems in mathematics, science and the use of the English language. With the aid of outside sponsors, they set up activities both within the university and in schools to help with these problems. Nabarro played a large part in coordinating these.

Frank Nabarro was one of five founding members of the SA Institute of Physics in 1955 who attended the jubilee celebration of the Institute last year. He was a Vice-President of the Institute and throughout his life he remained a loyal and enthusiastic supporter of its role in promoting Physics in South Africa.

He married Margaret Constance Dalziel (deceased 2 September 1997) on 25 June 1948. They had 3 sons and 2 daughters.

Professor Nabarro received the following awards:

- MBE (1946) , Beilby Memorial Award (1950)
- FRS (1971), South Africa
- Medal of the South African Association for the Advancement of Science (1972),
- Honorary Fellow of the Royal Society of South Africa (1973),
- De Beers Gold Medal, South African Institute of Physics (1980),
- Claude Harris Leon Foundation Award of Merit (1983), J F W Herschel
- Medal, Royal Society of South Africa (1988), Honorary Member,
- South African Institute of Physics (1991), CSIR Fellow, South Africa
- > (1994), AIME R F Mehl Award (1995), Founder Member, Academy of Science of South Africa (1995), Foreign Associate, US National
- > Academy of Engineering (1996), Institute of Materials Platinum Medal (1997),
- Honorary Member, Microscopy Society of Southern Africa (1998),
- Honorary President, Johannesburg Musical Society (1999),
- Order of Mapungubwe in Silver (2005).

Source – SAIP Special Newsletter

**AUSTRALIAN CONFERENCE ON  
MICROSCOPY AND**

## **MICROANALYSIS (ACMM 19), Sydney, 2006**

In February this year I attended ACMM 19, the biennial conference of the AMMS, in Sydney. The theme of the conference was "Microscopy Solutions". This was a great conference, with a cast of thousands (well, hundreds anyway), stimulating presentations and lively parties. Also attending was an old friend and MSSA member: Dane Gerneke, formerly of the UCT EMU and now with the University of Auckland.

The conference, held over four days, was a much grander affair than our annual MSSA conference. Held at a non-university conference venue, and organised by professional event organisers, it ran very smoothly and stylishly. Of course, you pay for this with a high conference registration fee! The conference convenors were NANO's Simon Ringer and Rosie Hicks, who some of you will remember attended MSSA 2003 with John Drennan of U. Brisbane.

### Some highlights of my trip:

-Meeting Kath Smith, President of AMMS, and attending the AMMS AGM. Microscopy societies, it seems, are very much the same the world over!

-Listening to some brilliant presentations. In addition to the invited speakers at plenary sessions, each scientific session (multiple sessions over four days) was anchored by an invited speaker. This made for a fantastically high overall standard and a good range of subjects.

-The trade exhibition – BIG space and five live beams!

-Explaining to the JEOL reps (JEOL has been in Australia for 40 years, and sponsored the conference dinner) that I am still using a 1979 model 200CX!

-A visit to the EMU at U. Sydney – cool toys.

### Some great ideas that MSSA could emulate:

-AMMS produces a calendar with micrographs from AMMS members – and competition to get your micrograph into the calendar is stiff!

-A public lecture accessible to non-microscopists was included in the conference programme – "Journey into Inner Space" included questions such as "can we explore

both the physics and the metaphysics of microscopy?"

### Some things that we do better than the Aussies:

-Conference Proceedings!

-Having our conference dinner at the end of the conference. (ACMM very cleverly have a plenary in the last session, to persuade people not to leave early. But I think a dinner is a better incentive.)

### Some overheard complaints that had a familiar ring...

Conference registration fees are too expensive and should be reviewed.

The conference should consider the interests of exhibitors as well as members.

ACMM 20 will be in Perth in 2008. I highly recommend it!

**Candy Lang**

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Ancient snippets for modern politicians:

Salus populi suprema est lex. The welfare of the people is the ultimate law.

Cicero, 106-43 BC

Liberty means responsibility, that is why most men dread it.

George Bernard Shaw 1856 - 1950

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Advertise a service in your laboratory (University or Government Supported!) or your microscopy-related business by sponsoring an issue of the MSSA Newsletter. This Newsletter finds its way to just about every microscopy laboratory in Southern Africa. The cost of sponsorship and the associated advertising space is very reasonable. Contact the Editor, Tony Bruton for a quotation, you will be pleasantly surprised!

**PROTRAIN AGAIN OFFERS  
SEM COURSES IN SA**

**Protrain/Council for  
GeoScience/ Anaspec  
presents:**

**BASIC SEM TRAINING**

Monday – Wednesday 2-4 OCTOBER  
R2000 plus VAT

**BASIC EDX TRAINING**

Thursday- Friday 5-6 OCTOBER  
R2000 plus VAT

**ADVANCED SEM TRAINING**

Monday- Wednesday 9-11 OCTOBER. –  
R3000 plus VAT

Spaces are limited, interested parties should  
**contact Neville at Anaspec** as soon as  
possible. [Neville@anaspec.co.za](mailto:Neville@anaspec.co.za) or call 082  
857 4599 or 011 794 8340.

For more details on the course please take a  
look at: <http://www.emcourses.com> or  
[www.anaspec.co.a](http://www.anaspec.co.a)

The courses will be held at the Council for  
Geoscience, Pretoria.

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INSTRUMENT AVAILABLE

Is there anyone out there who has a use for -
or who knows (or can think of) a person who
might have a use for a 1979 vintage JEOL
200CX. The machine works. We have a full set
of manuals and service diagrams, complete
service information a stock of spare parts and
a variety of holders.

It will break my heart to see the grand old lady
consigned to the scrapyard. I can think of a
whole lot of uses for it if we had the time the
money and the space!!

Trevor Sewell. sewell@uctvms.uct.ac.za

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**Some inspiration;**

*I must go down to the sea again, to the  
vagrant gypsy life*

*To the gull's way and the whale's way  
where the wind's like a whetted knife*

*And all I ask is a merry yarn from a  
laughing fellow rover*

*And a quiet sleep and a sweet dream  
when the long trick's over.*

John Masefield 1878 - 1966

*When all the world is young, lad*

*And all the trees are green*

*And every goose a swan, lad*

*And every lass a queen*

Charles Kingsley 1819 - 1875

*Gather ye rosebuds while ye may*

*Old Time is still a-flying*

*And this same old flower that smiles to-  
day*

*Tomorrow will be dying*

Robert Herrick 1591 - 1674

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**Don't forget your Technical
Forum submissions for MSSA
2006. Submissions to Mike lee at
leem@ul.ac.za. For the submission
format see the Conference Website:
www.nmmu.ac.za/mssa2006**

*This issue of the MSSA Newsletter was compiled
by Tony Bruton at the Centre for Electron
Microscopy at the University of KwaZulu-Natal in
Pietermaritzburg. Opinions expressed in this
newsletter are gained from a variety of sources
and do not necessarily reflect the views of the
Editor, the University, the Sponsors or MSSA. The
editor may be contacted at (033) 260 5155 or by
email on bruton@ukzn.ac.za. Written contributions
and comment on this newsletter are welcome.*

Many MSSA members will remember the **new**

Award made by ALS/JEOL at MSSA 2005 in Pietermaritzburg. The very happy first recipient of that award was **Abram Chawanji** from Rhodes University. His prize was an all expenses-paid trip to MicroScience in London. *This is his personal account of that trip:*

My journey commenced in earnest from Johannesburg International Airport. The previous day I had arrived from Harare before spending the night in Pretoria. With me at the airport were three friends. I have always regarded myself as an intrepid traveler but on that night I was uncharacteristically nervous. For starters, I was not sure what to expect in London. At JHB international airport I went in through the usual check-in routine before boarding the plane. Then began the 10 hour flight to London. We arrived in London (Heathrow) in the morning. Waiting for me in the International arrivals lounge was Pete Lander (the JEOL regional manager). I had not met him before but he was holding a placard with the words JEOL. We exchanged greetings and then he led me to his car before driving to JEOL Headquarters in Welwyn Garden City, Hertfordshire. Along the way I enjoyed the scenery and the elegant motorways. At JEOL headquarters I was introduced to John Crichell (applications manager) and other staff. Pete took me on a brief tour of the company. I was shown a wide variety of scanning electron microscopes (SEM), scanning probe microscopes, transmission electron microscopes (TEM), NMR spectrometers, ESR spectrometers, mass spectrometers, amino acid analysers and semiconductor process equipment. Pete also took time to explain about the installation, preventative maintenance for some of the instruments.

In the afternoon we went over to the conference venue at the Excel Exhibition centre. This centre is situated in the heart of London Docklands, just a short distance to the London City Airport. There I was introduced to two fine gentlemen, Andy Yarwood (applications specialist) and Larry Stoter (sales executive). They were busy

preparing the JEOL stand for the next day. From there I went to check into the Custom House Hotel which is just minutes away from the conference venue. I was lucky to get a room overlooking the conference venue and I could see lots of planes landing at the nearby airport. By then I was extremely tired and was just keen to rest. I watched television briefly where I focused on the soccer world cup as well as live tennis matches from Wimbledon before retiring for the night. The next day I found my way to the conference venue with my poster. First I had to find the right place for my poster, which I did with the assistance of Pete. The poster session was between 12 and 2 pm and I had to stand next to it and answer some questions. The poster session was rather informal and easy compared to the MSSA sessions where one is expected to present a brief talk. After lunch I found myself at the RMS learning zone where I had the opportunity to update and improve my skills and learn new techniques in microscopy. The people who gave the talks are experts and one could see in the way they answered questions and demonstrated their skills. Over the next two days I attended all three talks on understanding light, digital and scanning electron microscopy. On Wednesday I enjoyed talks on 3-D imaging in cell biology (TEM meeting confocal) as well as high resolution live-cell imaging. On Thursday I spent some time attending talks in fluorescence lifetime imaging and their techniques and applications in cell biology. The workshops were also interesting and I managed to attend a number where the topics ranged from specimen preparation for microscopy to tomography. In the end it was all worthwhile and my knowledge has certainly been greatly enhanced. I am very grateful to the people who made all this possible. In particular: Pete Lander, Dave Perrett, Larry Stoter, Andy Yarwood, John Crichell, Candy Lang and Almina Twala. Thank you so much.

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