



Society News

Official Newsletter of the Catalysis Society of South Africa

Volume 17 Issue 1 November 2010

Inside this issue:

- 1** CATSA 21 YEARS
- 2** Conference 2009
- 3** 2010 CATSA Committee
- 4** In Memoriam to Chris Nicolaides
- 5** Student Travel Grant
- 6** c*change
- 7** Upcoming international catalysis conferences

Society News Editor:
Cathrin Welker-Nieuwoudt
Sasol Technology R&D
Klasie Havenga Rd., Sasolburg, 1947

Fax: (011) 522 8962
Tel: (016) 960 4779
Email: cathrin.welker-nieuwoudt@sasol.com
Website: www.catsa.org.za

CATSA 21 YEARS – A HISTORY

by Cyril O'Connor, Neil Coville and Ray Everson

The Catalysis Society of South Africa was founded 21 years ago at a Catalysis Conference in Rustenburg in 1989. Prior to that year regular but informal meetings of the relatively small number of people actively engaged in catalysis research had been hosted by the Chemical Engineering Research Group (CERG) at the CSIR where a vibrant catalysis activity was in place led by Wim Mandersloot, the Director of CERG, and involving, at various times, people such as Tiny Stander (formerly AECI), John Davidtz (who had returned from a senior position at Mobil labs in Princeton), Mike Scurrall (who joined the CSIR to head up catalysis research from a position in Denmark), Ian Leith, Lloyd Caldwell, Dawie van Vuuren, Rafael Espinoza, Mike Howden and others.

Eric Singleton and colleagues in the CSIR Chemistry Division were carrying out research in the area of organometallic chemistry, largely based on ruthenium, which had implications for homogeneous catalysis. At that time, there were a few strong catalysis research groups at South African Universities. At the then University of Potchefstroom (now NWU) Ray Everson (who had come from Natal where he had developed a strong FT group) led a group in the Dept. of Chemical Engineering and included post-grads who later went on to senior positions in industry such as Harko Mulder, Mike de Pontes and others.

At UCT a group in the Department of Chemical Engineering, led by Cyril O'Connor and Jack Fletcher, later joined by Masami Kojima, had begun catalysis research in 1981 and by 1985 this has grown to a significant size. In terms of Chemistry Dept's. Wits had a significant activity in homogeneous catalysis.

CONTINUED...

This was led by Neil Coville while a heterogeneous catalysis group was initiated by Graham Hutchings in 1984. That group included the late Dick Copperthwaite. The then RAU also had a group led by Professor van Berge.

In terms of industrial catalysis research the main players at that time were Sasol and AECI. Later Sentrachem became involved in establishing at UCT, together with AECI and Sasol the first joint venture between the FRD and Industry, an initiative driven by the President of FRD at the time, Rein Arndt. Sasol played a key role then, and still do now, in promoting catalysis research in South Africa. Although their main focus of interest was FT catalysis they funded research across a broad front including the oligomerization of olefins into liquid fuels, phenol conversions, etc.

AECI on the other hand were especially interested in the MTO and MTG processes based on ZSM-5 catalysis and had built a pilot plant in their Modderfontein laboratories. At Sasol the activities were led by Mark Dry, Andries Brink, Arie Geertsema (who had moved in the early 80s to Sasol from the Chemical Eng. Department at Potch.) and others. At AECI people such as Les Mc Dougall and others were championing catalysis research. Later on this was strengthened by the support from Fanie Marais and others at the newly formed Biochemtech division of CSIR.

In 1982 a group of catalysis researchers which included Mark Dry, Ray Everson, Neil Coville, Eric Singleton, Dave

Hughes, Ray Haines, Tiny Stander and Cyril O'Connor spent a week in Israel as guests of the government and this time together played a key role in bringing us all closer together as a community of South African researchers.

As mentioned above, from the late 70's, until the foundation of CATSA, informal meetings were held at CERG in Pretoria. These were arranged by Wim Mandersloot who chaired these one or two day symposia in his legendary style! In 1983 Cyril O'Connor, Arie Geertsema, Neil Coville, Ray Everson, Graham Hutchings, Dick Copperthwaite, Mike Scurrall, and others began discussions on ensuring that the momentum developed by these annual meetings was not lost when Wim retired.

It was clear to all involved that a mechanism needed to be found to spread the symposia around the country and that we should share the responsibility for organizing these events. It also became clear that we needed to establish a formal society if we were to engage with other national bodies such as the North American Catalysis Society, the British Zeolite Association, and so on.

Hence it was decided that we would launch the Catalysis Society of South Africa and that Arie Geertsema and Cyril O'Connor would jointly propose the formation of such a society at a catalysis symposium which was planned for the Safari Lodge in Rustenburg in 1989. Cyril O'Connor drew up a draft constitution and the motion was put at a special meeting of the delegates. After considerable discussion it was unanimously agreed that the Catalysis Society of South Africa should be formed and a

Committee was elected consisting of, among others, Mike Scurrall (Chair), Arie Geertsema, Neil Coville, Ray Everson, JAK du Plessis, Rafael Espinoza, Chris Nicolaidis and Cyril O'Connor (Secretary).

In the early days the Committee met via teleconferencing and this ensured that the momentum was continually sustained even though we were geographically quite remote from each other. In a paper in Applied Catalysis in 1996 describing the catalysis scene in South Africa it was noted that: "Catalysis R&D meetings and conferences in South Africa are organised by the Catalysis Society of South Africa which was founded in 1990. Membership, which consists of about 120 permanent members, is not strictly controlled but all persons attending the Annual Conference, which rotates around the country and is held around October every year, are placed on the Society's mailing list for the ensuing two years.

The Annual Conference of the Catalysis Society of South Africa is usually attended by between 100-130 people and recently there has been an increased international participation.

The proceedings of the Conference usually consist of the abstracts of the papers and the Society does not hold copyright thereof. In the case of International Conferences to date, the proceedings have also been published but no copyright held [Applied Catalysis A: General 147 (1996) 247-251].

Looking back, the history over the past 21 years is testimony to the success of this venture.

CONTINUED...

Within a very short time of its establishment CATSA developed a healthy bank balance much to the envy of other similar professional societies. It also rapidly established a number of strong international connections with bodies such as the International Association of Catalysis Societies, the International Zeolite Association and this enabled South Africa to begin playing a more active role internationally, operating under the aegis of CATSA.

A logo was designed, a newsletter sent out on a regular basis and eventually, a website established. Within a short space of time CATSA successfully hosted the 4th International Natural Gas Conversion Conference (1994), the 14th International Zeolite Conference (2003) and the 1st Conference of the Indo-Pacific Catalysis Association (1998).

Being able to bid for these events as CATSA activities added significantly to the status of such proposals. CATSA Conferences began to rotate around the country and were held at places such as the Kruger National Park, Midrand, Rustenburg, Gordon's Bay, Golden Gate, Richards Bay, Mossel Bay, etc.

To those of us who were involved in the founding of the Society it is most encouraging to see how it has gone from strength to strength over the past 21 years.

Membership of the Committee has devolved to newer and younger members, the attendance at conferences has grown significantly, and

international experts are regularly hosted as Plenary or Keynote lecturers. The Society in its early years introduced an Eminent Visitors Award and also a Lifetime Achievement Award to recognize significant achievements and contributions to the Society and its activities.

Today catalysis research in South Africa is in a healthy state – the establishment of C*Change, the National Centre of Excellence in Catalysis, has been a great success thanks to the leadership of Jack Fletcher.

This initiative has also ensured that there is a strong national integration between sub-disciplines such as heterogeneous catalysis, homogeneous catalysis and biocatalysis.

Finally it would be inappropriate not to finish this brief history by thanking those far sighted people from the corporate world and government, especially Sasol, AECl, Sentrachem, and the FRD (later NRF) who realized how critical it was to ensure that there was strong support for catalysis research at our HEIs.

Today the widespread presence of graduates from those days in senior positions in industry and universities is evidence of how successful their intervention was at the time. It is also fitting at this time to recognize the long association that Leon de Jager (Poretech) has had with the Society – the Poretech Challenge continues to be a feature of all CATSA Conferences!

CATSA 2009

The 2009 CATSA Conference (8th–11th November), hosted by the University of Stellenbosch, was held in the Goudini Spa close to Worcester in one of the most beautiful areas of the Western Cape. The meeting was sponsored by BASF, PetroSA, Poretech, Sasol and Sud-Chemie. The venue played host to yet another riveting meeting of South Africa's catalysis expertise, and as usual an extremely high standard of academic and industrially orientated material was on show.

A record number of delegates (approx. 250), from the local and international catalysis communities, attended the event. This large scale participation is indicative of the impressive state in which the Society now finds itself.

Social events included a tour to the 'House of Brandy's' in Worcester that ensured that the delegates were kept 'warm'. This was followed by a water volleyball tournament in the pools of the Goudini Spa with the Engineers winning the Poretech Challenge over the Chemists.

Despite all these exciting social events, a large number of high standard oral presentations were given.

The CATSA 2009 Eminent Visitor was Prof. Bert Weckhuysen from Utrecht University in the Netherlands. Prof. Weckhuysen is a world leader in the characterization of heterogeneous catalysts - and delivered a lecture on the use of in-situ spectroscopy to probe catalytic materials at different length scales.

The scientific program focused on the main interests of the

South African community, viz. heterogeneous, homogeneous as well as bio catalysis. The majority of the oral and poster presentations were in the field of Fischer-Tropsch Synthesis and its product work-up. This was also highlighted by the presence of a large number of Sasol delegates.

Winner of the Sud-Chemie best oral award was Ms Alisa Govender (UKZN) for her work entitled: "Deactivation of supported copper oxide catalysts for aldehyde hydrogenation reactions".

The winner of the Micromeritics best Postal award was Sam Xaba (NWU) for his work entitled "Synthesis and modeling of W-catalysts for alkene metathesis".

Abstracts and other information from CATSA 2009 may be obtained by emailing the CATSA Media Officer.

New CATSA Committee

At the Annual General Meeting of the Society, held during the 2009 Conference in Goudini Spa, the 2010 CATSA Committee was elected. The new committee is as follows:

Chairperson:

Jason McPherson

Secretary/Treasurer:

Stephen Roberts

Media Officer:

Cathrin Welker-Nieuwoudt

2010 Conference Organizer:

Andre Roodt

Student Representative:

Letitia Benade

Committee Members:

Michael Claeys
Manie Vosloo
Holger Friedrich
Tracy Bromfield
Masikana Mdeleleni
Selwyn Mapolie
Greg Smith
Mike Scurrall
Alan Thompson
Jack Fletcher

Special thanks to Prof. Michael Claeys, the Chairperson of the Society for the past two years, under whose leadership the society has continued to grow.

In Memoriam - Chris Nicolaides

The Society was saddened to hear of the passing of Dr. Chris Nicolaides. At CATSA 2009 Prof. Mike Scurrall (Wits) gave a moving speech outlining Dr. Nicolaides' achievements and his long term commitment to CATSA.

"Chris was a graduate of Wits, gaining his PhD in 1982, under the supervision of Neil Coville. A postdoctoral appointment saw him working with Bruce Gates in Delaware after which he returned to South Africa and joined the CSIR, working at the then National Chemical Laboratory, and involved in organometallic chemistry and homogeneous catalysis. In 1985 he made a move within the CSIR and joined Mike Scurrall's Catalysis Group, then concerned with heterogeneous catalysis, mainly for use in the synfuels arena. At that time the Mossel Bay gas to liquids plant was on the drawing board and zeolite-mediated catalysis was one of the main areas being researched.

Chris became involved in this field, and, like for many others of us, zeolites became one of his main research themes during the rest of his career, particularly in the area of hydrocarbon conversions and catalysis by partially crystalline materials.

A switch to academia saw him join the then Department of Chemistry at Wits in 1996,

where he continued with work on catalysis and started the collaboration, still in place with the then University of the North in zeolite synthesis and zeolite-catalyzed reactions.

A brief stint at the Chemical Process Engineering Research Institute (CPERI) in Thessaloniki, Greece started in 2000. This Institute was then a member of the Foundation for Research and Technology-Hellas (FORTH) and was undergoing expansion in the area of process catalysis. But South Africa called again and Chris returned to take up a position at Sasol Technology in Research and Development where he remained for the rest of his career.

Chris was a dedicated and thorough scientist, painstaking in his research and, particularly when polishing manuscripts nothing escaped his eye and very logical approach to committing himself to print. He was not keen on the idea of publishing data until he was sure that the results would stand up to the scrutiny of his peers and became sought after for his patience and sincere attempts to train the next generation of catalytic chemists to think logically and critically about their work.

Since its inception he was a very active member of the Catalysis Society of South Africa and attended most of the annual conferences.

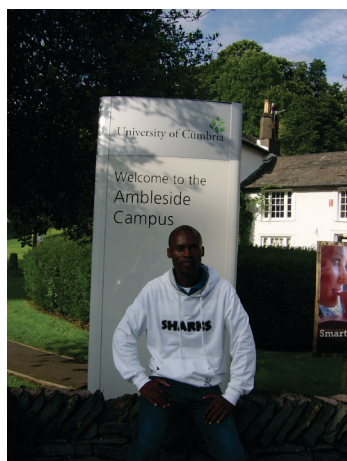
He is survived by his wife, Stacey, whom he met during his undergraduate days, and three children."

Student Travel Grant

CATSA supports post-graduate students to travel and present at

international conferences. In 2009/2010 four students received support for international conference participation.

Mduduzi Cele, an MSc student from the UKZN attended the 32nd annual British Zeolite Association Meeting in Ambleside city at the University of Cumbria from 23 August 2009 to 28 August 2009.



Mduduzi at the Ambleside campus

Mduduzi attended lectures by top researchers such as Christian Baerlocher, Enrique Iglesia, Susumo Kitagawa, Ben Slater and Bao-Lin Su. The talks and the posters were about modeling, metal organic frameworks and catalysis. It was clear that even though the technology of zeolites has shifted to metal organic frameworks, there is still a lot that can be done and achieved using zeolites. Zeolites are unique materials that can be tuned and modified to suite a specific application.

Apart from the interesting lecture that was delivered by Bao-Lin Su where he talked about the preparation and characterization of hierarchically micro-meso-macroporous zeolite architectures via semi-solid

state transformation-crystallization process, the talk that captured his interest was by Enrique Iglesia entitled "Consequences of spatial constraints in acid catalysts: Shape selectivity Revisited".

In this lecture, he investigated the activity and location of Brønsted acid site in the 8 and 12 member rings of mordenite. His emphases were on the required technique to selectively place the OH group within specific locations on H-MOR. He described this technique as guidelines for the design and modification of micro porous structures.

Ambleside city is different from the other cities in UK. Houses are built of rock. It is a tourist place, there is Windermere Lake (the biggest lake in UK), and Dove cottage which was the home of the poet William Wordsworth.

Jean du Toit and Morena Xaba from the NWU both gave poster presentations at the 18th International Symposium on Olefin Metathesis and Related Chemistry which was held in Leipzig, Germany from the 2nd – 7th August 2009.

The scientific program consisted of 57 oral and 90 poster presentations. Some of the highlights of the oral presentations were the talks by the two 2005 Nobel Laureates: Richard Schrock (Thousands of catalysts for olefin metathesis: variability, longevity and asymmetry at the metal) and Robert Grubbs (The synthesis of large and small molecules using olefin metathesis).

Jean presented a poster entitled 'A modelling inquiry into the mechanism of

homogeneous

olefin

metathesis'.



Jean explaining her poster to a student from Zuerich, Switzerland

Morena presented a poster entitled: A Tungsten(VI) Aryloxide Catalyst with a PCU-8,11-dione-type Ligand for Alkene Metathesis.



Morena together with Stefan Günther, University of Hamburg, Germany and the Nobel Price Laureate Richard Schrock from Massachusetts Institute of technology, USA.

The conference excursion, took them through the old city of Meissen which is almost a thousand years old. The day ended with the conference dinner at Schloss Wackerbarth, situated on the Saxon Wine Trail, in the heart of Germany's smallest winery district.

Banothile C.E. Makhubela, a Ph.D. student from UCT, gave a poster presentation at the 24th International Conference on Organometallic Chemistry (IMOMC 2010) in August 2010, which was held in Taipei City, Taiwan. This conference is held

every 2 years and this years' meeting provided a forum for in-depth assessment of the challenges involved in the dynamic and fast moving field of chemistry research. It brought together leading chemists from around the world to exchange and present their latest developments in organometallic chemistry.

Banothile presented a poster entitled 'Chitosan-supported PdII Schiff base complexes for Suzuki-Miyaura and Heck cross-coupling reaction' and was awarded the Best Poster Prize during the conference.



Banothile receiving an award for the Best Poster Presentation from the Co-chairperson of the 24th ICOMC Prof. Yun Chi.

She interacted and discussed chemistry related topics with leading young and senior researchers from various institutions, and gained insight on recent advances in the field of organometallics. Oral presentations were given by world leaders in the field of organometallic chemistry such as Prof. Richard Schrock, the Nobel Laureate in Chemistry from 2005.

Travel Applications

There are four deadlines for applications for the CATSA Travel Grant, the last day of January, March, June and September. More information

regarding the CATSA Travel Grant can be found on the webpage (www.catsa.org.za).

DST-NRF c*change



DST-NRF c*change, the Centre of Excellence in Catalysis, involves 10 different South African Universities: University of Cape Town, University of Stellenbosch, University of the Western Cape, University of the Free State, Nelson Mandela Metropolitan University, University of the Witwatersrand, University of Johannesburg, University of Kwazulu-Natal, North-West University and the University of Limpopo.

Currently the University of Cape Town acts as host institution with Prof. Michael Claeys as the chairperson of c*change. These large scientific teams are divided into different sub-committees focusing on the areas of engineering, heterogeneous, homogeneous and bio catalysis, as well as computational chemistry to provide a basis for multidisciplinary research. c*change entails five different subcommittees: Syngas to olefins, RSA olefins, Paraffin activation and small volume chemicals. The entire research is linked to relevant industries within South Africa.

The 2009 c*change team comprised some 57 postgraduate students, 6 postdoctoral researchers, and nominally 24 academics from 14 research groupings in 9 participating South African Higher Educational Institutions. A total of 21 projects were

funded during the course of 2008, of which 12 were multi-institutional and/or inter-disciplinary projects.

A total of 15 publications, 6 published conference proceedings and 32 unpublished conference contributions form part of the specific 2009 c*-change-related research outputs of the participating catalysis community. In addition, two provisional international patent applications have been submitted. Five local joint venture postgraduate student training initiatives were undertaken to forge closer ties in collaborative projects, and seven overseas postgraduate students study visits were supported during 2009.

Moreover, the year 2009 also saw several initiatives to establish international catalysis networks and collaborations with several institutions in the UK and Germany. c*change held its fifth annual Symposium in November 2009 in Rawsonville. For further information regarding c*change email Prof. Michael Claeys (michael.claeys@uct.ac.za).

Conference Diary

Europacat X

The 10th Europacat conference will be held at the University of Glasgow in Scotland. Abstract submission will open on 1 November 2010 and more information is available on the website www.europacat.co.uk.

22nd NAM 2011

The next meeting of the North American Catalysis Society (NAM) will be held from 5-10 June 2011 by the Michigan Catalysis Society in Detroit. See <http://22nam.org/index.html>.