Contents

1. Message from the National President
2. Editorial
3. AXAA 2011 Conference Announcements
   Ø Call for Poster Abstracts
   Ø Student Bursary Recipients
4. VIC Student Seminar Day Report
5. Company News
6. Upcoming Events
   Ø National XRD Course
   Ø Internet XRF Course
   Ø 7th TOPAS Bruker Users’ Meeting
7. Calendar of Events
8. Website and Contacts
9. Company Advertising
   Ø Bruker AXS
   Ø PANalytical
   Ø Diffraction Technology - GBC
   Ø AXT and Rigaku
   Ø Sietronics
1. **Message from the National President**

Welcome to the last AXAA newsletter for 2010! What a success this year has been, with student seminar days held in both NSW (fifth consecutive year) and VIC for the second year running, and a techo arvo event in NSW for the second consecutive year too. Most recently, the VIC Student Seminar Day was a great success, with the 2 winners adding to the pool of student bursaries for AXAA-2011 being awarded. Congratulations to all our student bursary winners from both student seminar days and from the national call for applications. Speaking of AXAA-2011, although early-bird registration has now closed, general registration is still open for last minute attendees, and we still have some places left for posters, which are able to be submitted via the conference website. Get your posters in now folks.

The National Council will be voted in at the next AGM, to take place at AXAA-2011. Please get your nominations to me by the 18th January 2011. Finally, a big thank-you to Cat Kealley for all her hard work as newsletter Editor; this is her last newsletter as the National Council looks towards re-shaping in next year. Congratulations to her again for producing 12 great editions.

Happy holidays!

Vanessa Peterson  
AXAA President

2. **Editorial**

With less than two months to AXAA 2011, the program has been finalised, the speakers notified, the student bursaries awarded, and the excitement is building!!!!

We hope you enjoy our December newsletter – it is the last newsletter for 2010, and my final as editor, before the new AXAA National Council forms in February 2011. For those of you on my email reminder list, I will forward your details on to the new editor (to be decided in February 2011), whom will contact you with the closing date for submissions for the first newsletter in 2011. In the meantime, if anyone does email me a submission, I will also forward this on to the new editor.

I would like to take this chance to say a massive THANK YOU to everyone who has contributed over the last three years! Thank you for all of your support and time, and for (almost) always submitting your contributions by the deadline. You have all made my job as editor very, very easy. I never had to go searching/nagging/bullying for articles (which is amazing), and I think this gives a clear indication of the interest and strength of the AXAA community. A special thank you must go to Vanessa Peterson, Chris Kelaart, Jessica Leong and Brian O’Connor; they never missed an edition!

Catherine Kealley  
AXAA Vice-President/Newsletter Editor
3. AXAA 2011 – Conference Announcements

Call for Poster Abstracts

Although the “Call for Abstracts” has officially closed, we are still accepting abstracts for posters. Please complete abstract submission at: www.axaaconference.info

Congratulations to our Student Bursary Recipients:

<table>
<thead>
<tr>
<th>Student</th>
<th>University Affiliation</th>
<th>Bursary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew Princep</td>
<td>University of New South Wales</td>
<td>AXAA</td>
</tr>
<tr>
<td>Chantelle Driever</td>
<td>Melbourne University</td>
<td>AXAA</td>
</tr>
<tr>
<td>Elizabeth Fellows</td>
<td>University of Sydney</td>
<td>AXAA</td>
</tr>
<tr>
<td>Jessica Chadbourne</td>
<td>University of Sydney</td>
<td>AXAA</td>
</tr>
<tr>
<td>Mark Styles</td>
<td>Melbourne University</td>
<td>AXAA</td>
</tr>
<tr>
<td>Ross Williams</td>
<td>Curtin University</td>
<td>AXAA</td>
</tr>
<tr>
<td>Sam Duyker</td>
<td>University of Sydney</td>
<td>AXAA</td>
</tr>
<tr>
<td>William Rickard</td>
<td>Curtin University</td>
<td>AXAA</td>
</tr>
<tr>
<td>Xiaodong Wang</td>
<td>Curtin University</td>
<td>AXAA</td>
</tr>
<tr>
<td>Xiaoshuang Yang</td>
<td>University of Sydney</td>
<td>AXAA</td>
</tr>
<tr>
<td>Yue Wu</td>
<td>University of Sydney</td>
<td>AXAA</td>
</tr>
<tr>
<td>Erla Hafsteinsdottir</td>
<td>Macquarie University</td>
<td>PANalytical</td>
</tr>
<tr>
<td>Fatemeh Mirmajafi Zadeh</td>
<td>University of New South Wales</td>
<td>PANalytical</td>
</tr>
<tr>
<td>Talitha Santini</td>
<td>University of Western Australia</td>
<td>PANalytical</td>
</tr>
<tr>
<td>Anna-Lisa Chaudhary</td>
<td>Curtin University</td>
<td>Bruker</td>
</tr>
<tr>
<td>Nicola Forster</td>
<td>University of New England</td>
<td>Bruker</td>
</tr>
</tbody>
</table>

Vanessa Peterson
AXAA President

Back to CONTENTS
4. “Something To Bragg About” Report

2010 AXAA VIC Student Seminar Day, “Something to Bragg About”

The 2010 AXAA VIC Student Seminar Day, “Something to Bragg About” was held on the 6th October at CSIRO Materials Science and Engineering in Clayton. An audience of 25, including students, postdocs and senior research scientists were first treated to a plenary presentation given by Dr David Hay, which was an overview of recent work using micro-mapping (XRD and XRF) and X-ray absorption spectroscopic (XAS) measurements (XANES, EXAFS) for imaging pigment distribution in paintings. Following this, excellent presentations on a wide range of topics were made by PhD students Ajay Mahato (Deakin University Geelong), Mark Styles (Melbourne University and CSIRO), Shuhuna Peng, Juan Zhang (both Deakin University Geelong and CSIRO), Chantelle Driever, Nicholas Tse (both Melbourne University and CSIRO) and Vanalysa Ly (Monash University). Chantelle and Mark were each awarded a student bursary prize, covering airfare, accommodation and registration costs to attend and present at the AXAA 2011 conference in Sydney, for giving the best presentations as judged by a panel of five experts. Chantelle talked knowledgeably and enthusiastically about her research investigating the control of burst release of cubosomes through nano-encapsulation, and Mark gave an impressive account of an environmental cell he developed for studying molten salt processes in situ using energy dispersive X-ray diffraction. Well done! The organisers wish to sincerely thank all those who helped make this a successful event; Liz Goodall for her timekeeping, David for his plenary presentation, and David, Ian Madsen, Rod Clapp, Aaron Seeber and Rob Evans for their expert judging.


Nathan Webster and Natasha Wright
CSIRO

Back to CONTENTS
5. **Company News**

**Bruker acquires Veeco Instruments Inc**

Bruker Corporation recently announced the acquisition of the Atomic Force Microscopy (AFM) and the Optical Industrial Metrology (OIM) instruments businesses from Veeco Instruments, Inc.

The industry-leading AFM scientific instruments business headquartered in Santa Barbara, California, as well as the OIM business based in Tucson, Arizona, along with the global AFM/OIM field sales, applications and support organizations, have now become part of the Bruker Nano Division, which is part of the Bruker AXS Group, adding more than 350 employees in eleven countries.

The acquired AFM and OIM businesses are highly complementary to Bruker's existing systems and solutions, and the combined product portfolio transforms Bruker into a global leader in materials research and nanotechnology analysis instrumentation. In addition to the newly acquired AFM and OIM product lines, Bruker offers a broad range of high-performance X-Ray Diffraction (XRD), X-Ray Fluorescence (XRF), XRF microanalysis (XRF), vibrational spectroscopy (FTIR, NIR, Raman) and AFM hybrid (e.g. AFM-Raman, AFM-optical microscopy) systems, as well as EDS and EBSD analyzer accessories for third-party electron microscopes, all used for surface analysis in materials, life-science and nanotechnology R&D and quality control.

Bruker has long been a global leader in life-science research tools with a focused portfolio of high-performance NMR, pre-clinical MRI, EPR, life-science mass spectrometry and X-ray crystallography instruments. In May 2010, Bruker also expanded its mass spectrometry portfolio into the chemical analysis markets with the acquisition of laboratory GC, GC-MS/MS and ICP-MS product lines of Varian Inc.

Frank Laukien, President and CEO of Bruker Corporation, stated: "We are very excited about the addition of these highly regarded AFM and OIM businesses to Bruker, as they complement our focused product and market strategies very well. With these additional high-performance and industry-leading products, Bruker can now serve its global customers and markets even better. Moreover, we cordially welcome the many talented and motivated new AFM and OIM colleagues who have just joined Bruker."

Mark R. Munch, Ph.D., previously the Executive Vice President of Veeco's Metrology and Instrumentation Business, has been appointed President of Bruker Nano, Inc. with responsibility for the acquired AFM and OIM businesses. Dr. Munch commented: "Together with Bruker, we now have a tremendous new ability to further develop innovative products that will evolve the industry and how we measure and obtain nanoscale information. Bruker has been extremely supportive from the start and is dedicated to ensuring that our current and future customers receive the highest performing and most innovative instruments with unsurpassed service."

*Back to CONTENTS*
6. **Upcoming Events**

**National XRD Course X-ray Powder Diffraction Analytical Methods, Curtin University, Perth**

**Dates for 2011 course to be advised**

**Venue:** Department of Imaging and Applied Physics, Curtin University, Bentley (Perth), Western Australia. [Client-specific version of the course can be presented at the customer’s site].

**Duration of Curtin Course:** 4 days

Dates for 2011 courses to be advised

**Course Presenters:** Professor Brian O’Connor and Dr Robert Hart

**Enquiries and further information:** B.O’Connor@curtin.edu.au

**Cost:** $2,420 including GST

Availability of places strictly limited.

**Overview:** The course has been designed to give participants a theoretical and practical grounding in the principal characterisation methods which make use of x-ray powder diffractometry data. Approximately 60% of the course involves hands-on instruction. Participants personally collect diffractometry data sets and then process these, both manually and with PC computers, in exercises on various analytical methods, including Rietveld analysis. Public domain software will be used, including WINPLOTR and Rietica. The course also includes overviews and demonstrations of the commercial software packages X’Pert HighScore Plus and Diffracplus Topas. While the course is relevant to the analysis of all classes of crystalline materials, attention will be devoted mainly to materials relevant to the mining and mineral processing sector.

Brian O’Connor
Curtin University

---

**Internet XRF Course: Series 4, 2011**

The course provides XRF analysts, particularly those new to the field, with on-site instruction in the practical principles of wavelength dispersive XRF. Features of course include -

- Start at any time, subject to the availability of places in the course
- Self-paced instruction to accommodate the needs of busy people
- Study materials transmitted as e-mail attachments in the form of 11 modules; with an assignment being set for each module.
- Feedback on the assignments provides excellent mentoring.

The course now has a substantial number of international participants, as well as Australians,

**Course availability:** Starting date by arrangement. Approximately 5 places available for Series 4 (2011) of the internet course.

**Course director:** Dr Brian O’Connor

**Course fee:** $2,420 including GST

Further information and enrolment: brian_oconnor@iprimus.com.au (Tel 08 9291 7067)

Brian O’Connor
Dear Madam or Sir,

Bruker AXS cordially invites you to our 7th TOPAS Users’ Meeting, which will be held February 5-6, 2011, prior to AXAA 2011 conference, at the Novotel Darling Harbour in Sydney.

This highly interactive user’s meeting is aimed at providing users with essential theoretical background as well as some working experience. The major components of this workshop are problem solving and modeling methods, with the focus on the exchange of tips and tricks.

The meeting is open for anyone, users and non-users, interested in learning more about the TOPAS capabilities and applications. It is a unique opportunity to meet both the TOPAS makers and expert users and to profit from their experience.

Participants are encouraged to submit discussion topics in advance. The final schedule will take issues of general interest into account.

Organizers:

Amit Kern, Bruker AXS GmbH, Germany
Chris Kelaart, Bruker AXS, Australia

Invited speakers:

Ian Madsen, CSIRO, Australia
Nikki Scarlett, CSIRO, Australia
Jim Cline, NIST, USA
Ross Williams, Curtin University, Australia

Location and hotel reservations:

Novotel Sydney Darling Harbour
100 Murray Street
Darling Harbour
N.S.W 2000
Sydney
www.novoteldarlingharbour.com.au

Registration fee:

Full Delegate A$500.00 (+ GST)
Academic Delegate A$350.00 (+ GST)

Cancellation

For cancellation with in 10 working days before the start of the course, we will charge a cancellation fee of 30%. Booked persons not attending the course without having given prior notice will be fully charged.

Reaching the Hotel

7th TOPAS Bruker Users’ Meeting
February 5-6, 2011
Sydney, Australia

2nd Circular

Registration

Please mail or fax the completed registration form to:

Attn Chris Kelaart
Bruker Biosciences Pty Limited
128A Albert St
Preston VIC 3072

PC Box 8432
Northland Centre VIC 3072

Phone: +61-3-9474-7000
Fax: +61-3-9474-7070

Email: chris.kelaart@bruker-axs.com.au

www.bruker-axs.de

All configurations and specifications are subject to change without notice.© 2010 BRUKER AXS GmbH. Printed in Germany.
### Preliminary Program

**Saturday February 5th:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 - 09:00</td>
<td>Registration</td>
</tr>
<tr>
<td>09:00 - 09:15</td>
<td>Welcome and introduction</td>
</tr>
<tr>
<td></td>
<td>Chris Kelse, Amt Kam, Bruker</td>
</tr>
<tr>
<td>09:15 - 10:30</td>
<td>The TOPAS macro language and algebra system: Part I - Introduction</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Break</td>
</tr>
</tbody>
</table>

**Session I: Introduction to TOPAS**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 12:30</td>
<td>Profile fitting basics: a) Introduction to profile analysis</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30 - 14:00</td>
<td>Profile fitting basics: b) Walk-through: Profile fitting</td>
</tr>
<tr>
<td></td>
<td>Jim Cline, NIST</td>
</tr>
<tr>
<td>14:00 - 14:30</td>
<td>Use of crystallite size determinations in heated bone experiments</td>
</tr>
<tr>
<td></td>
<td>foreseeable slant - determination of temperature of heating bone</td>
</tr>
<tr>
<td></td>
<td>Mark Rawen, CSIRO</td>
</tr>
<tr>
<td>14:30 - 15:00</td>
<td>NIST SRM certification</td>
</tr>
<tr>
<td></td>
<td>Jim Cline, NIST</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Break</td>
</tr>
</tbody>
</table>

**Session II: Line Profile Analysis**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30 - 17:00</td>
<td>Quantitative (Rietveld) analysis with TOPAS - Introduction</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>17:00 - 18:00</td>
<td>Determination of Amorphous Content</td>
</tr>
<tr>
<td></td>
<td>Ian Madsen, CSIRO</td>
</tr>
</tbody>
</table>

**Sunday February 6th:**

**Session III: Quantitative Rietveld Analysis, ctd.**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 - 09:00</td>
<td>Sample preparation/measurement parameters</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>09:00 - 09:30</td>
<td>The external standard method or O'Connor and Raven (1988) - Calcined</td>
</tr>
<tr>
<td></td>
<td>bauxites</td>
</tr>
<tr>
<td></td>
<td>(Mark Rawen, CSIRO)</td>
</tr>
<tr>
<td>09:30 - 10:00</td>
<td>Quantification of Phases with Partial</td>
</tr>
<tr>
<td></td>
<td>or No Known Crystal Structure - PONKCS</td>
</tr>
<tr>
<td></td>
<td>Mike Scarlett, CSIRO</td>
</tr>
<tr>
<td>11:00 - 11:30</td>
<td>The PONKCS method: Walk-Through</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Break</td>
</tr>
</tbody>
</table>

**Session IV: Structure analysis**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00 - 11:30</td>
<td>Structure analysis with TOPAS: Features and capabilities</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>11:30 - 12:30</td>
<td>The TOPAS macro language and algebra system: Part II - Structure analysis</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>12:30 - 13:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30 - 15:00</td>
<td>Structure determination using TOPAS</td>
</tr>
<tr>
<td></td>
<td>a) Charge Flipping method</td>
</tr>
<tr>
<td></td>
<td>b) Simulated Annealing method</td>
</tr>
<tr>
<td></td>
<td>c) 3D Fourier analysis</td>
</tr>
<tr>
<td></td>
<td>Amt Kam, Bruker</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Break</td>
</tr>
</tbody>
</table>

**Session V: Extended modelling**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30 - 16:00</td>
<td>Corrections for accurate powder diffraction analysis</td>
</tr>
<tr>
<td></td>
<td>Ian Madsen, CSIRO</td>
</tr>
<tr>
<td>16:00 - 16:30</td>
<td>Pushing the PONKCS method: quantitative phase analysis with more than</td>
</tr>
<tr>
<td></td>
<td>one amorphous phase</td>
</tr>
<tr>
<td></td>
<td>Ross Williams, Curtin University</td>
</tr>
<tr>
<td>16:30 - 17:00</td>
<td>Use of batch files for processing in-situ</td>
</tr>
<tr>
<td></td>
<td>humidity experiments - reaction of ZnO and monosodium phosphate at various</td>
</tr>
<tr>
<td></td>
<td>humidities</td>
</tr>
<tr>
<td></td>
<td>Mark Rawen, CSIRO</td>
</tr>
<tr>
<td>17:00 - 17:30</td>
<td>Analysis of Energy Dispersive XRD Data</td>
</tr>
<tr>
<td></td>
<td>Matthew Rosslos, CSIRO</td>
</tr>
<tr>
<td>17:30 - ...</td>
<td>Wrap-up</td>
</tr>
</tbody>
</table>
## 7. Calendar of Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Further Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start at any time, subject to place availability</td>
<td>XRF I-Course</td>
<td>Internet delivery</td>
<td><a href="mailto:brian_oconnor@iprimus.com.au">brian_oconnor@iprimus.com.au</a></td>
</tr>
<tr>
<td>2011 dates to be advised</td>
<td>National XRD Course</td>
<td>Curtin University, Perth</td>
<td><a href="mailto:B.O%E2%80%99Connor@curtin.edu.au">B.O’Connor@curtin.edu.au</a></td>
</tr>
<tr>
<td>5-6 February 2011</td>
<td>7th TOPAS Bruker Users’ Meeting</td>
<td>Novotel Sydney Darling Harbour</td>
<td><a href="mailto:chris.kelaart@bruker-axs.com.au">chris.kelaart@bruker-axs.com.au</a></td>
</tr>
<tr>
<td>6-11 February 2011</td>
<td>AXAA 2011 Workshops, Conference and Exhibition</td>
<td>Star City, Darling Harbour, Sydney, Australia</td>
<td><a href="mailto:vanessa.peterson@ansto.gov.au">vanessa.peterson@ansto.gov.au</a></td>
</tr>
</tbody>
</table>

[Back to CONTENTS](#)

9
8. **AXAA Website and Contacts**

**WEBSITE** [http://www.axaa.org](http://www.axaa.org)

**NATIONAL COUNCIL PRESIDENT**
Vanessa Peterson, Bragg Institute, ANSTO, PMB 1, Menai, NSW 2234
Telephone: (02) 9717 9401, e-mail: vanessa.peterson@ansto.gov.au

**NATIONAL COUNCIL VICE-PRESIDENT**
Catherine Kealley, Department of Imaging and Applied Physics, Curtin University of Technology, GPO Box U1987, Perth, WA 6845.
Telephone (08) 9266 3673, e-mail: catherine.kealley@uts.edu.au

**NATIONAL COUNCIL SECRETARY**
Ned Blagojevic, ANSTO, PMB 1, Menai NSW 2234
Telephone: (02) 9717 3660, e-mail: ned.blagojevic@ansto.gov.au

**NATIONAL COUNCIL TREASURER**
Rob Hart, Department of Imaging and Applied Physics, Curtin University of Technology, GPO Box U1987, Perth, WA 6845.
Telephone: (08) 9266 2643, e-mail: r.d.hart@exchange.curtin.edu.au

9. **Company Advertising**

**D2 Phaser with XFlash® Detector - Combined XRD, EDXRD, and XRF analysis**

At the recent Denver X-ray and EPDIC Conferences, the unique D2 Phaser desktop diffractometer with integrated X-ray fluorescence capabilities was introduced.

The novel D2 Phaser with XFlash® detector represents the first desktop instrument offering angle-dispersive X-ray diffraction (XRD), energy-dispersive X-ray diffraction (EDXRD) as well as simultaneous X-ray fluorescence (XRF) measurements under ambient conditions. Based on the cutting-edge Silicon Drift technology, the XFlash detector features best energy resolution of less than 180 eV (CuKα) at count rate levels of more than 100,000 cps, making it the most versatile detector for a wide range of complementary applications.
For XRD, the XFlash offers an outstanding separation of sample fluorescence and Kβ suppression for unmatched peak-to-background ratios. Additionally, the D2 Phaser can be switched to an arbitrary wavelength within the X-ray tube emission spectrum. Commonly, the Kα1,2 doublet is employed for standard powder XRD. By using the XFlash detector Kβ can be selected instead in order to obtain monochromatic powder patterns avoiding peak overlap inherent to the commonly used Kα radiation. Observed line profile widths (FWHM) are identical to those of "classic" point detectors such as scintillation and proportional counters, i.e. better than 0.05° 2θ for SRM660a with CuKα.

Unique to the D2 Phaser with XFlash is its capability to obtain ED-XRD patterns at user-defined 20 positions. This mode allows extremely fast measurements, because the whole energy spectrum as seen by the detector is collected as once, without the need for mechanical movements. Thanks to the θ/θ geometry of the D2 Phaser, measurements can be performed even on loose powders.

XRF data are collected simultaneously with either XRD or EDXRD measurements, providing for element identification and monitoring of concentrations (K - Hf). Knowing the (partial) elemental composition of the sample greatly assists successful phase identification and quantitative analysis of unknown samples or of samples with similar diffraction patterns. Additionally, quantitative phase analysis results can be validated by comparing the calculated elemental composition with the actually measured elemental composition.

For more information contact:
Bruker Biosciences Pty Ltd
1/28A Albert St, Preston VIC 3072
Ph: 03 9474 7000
Cutting-edge technology. Ultimate commitment.

Experts on your site for high-throughput analysis

PANalytical is the world leader in X-ray analysis. Experience our innovative and flexible analysis solutions especially designed for the minerals and mining industry. Supported by our unique web-based program PANassist and an unmatched global sales and service team, we make sure you have the expertise when you need it.

Axios range – XRF spectrometers for fast routine analysis and process control:
- AxiosMAX-Minerals offers a dedicated solution to the industry and includes a complete set of traceable standards
- Axios FAST is the fastest simultaneous spectrometer on the market

MiniPal range – cost-effective benchtop XRF systems, ideal for accurate grade control and exploration materials.

CubIX® Minerals – most accurate and fastest diffractometer for production and process control, the perfect solution for grade control of drill cores and ores.

Understanding the analysis requirements you face, we offer tailor-made solutions for the industry:
- WROXI for analysis of the most common oxides in rocks and ores
- Pro-Trace for trace element analysis
- OmniaN for advanced standardless analysis of exploration samples
- Rietveld for quantitative phase analysis

Contact your local sales representative for more information.

PANalytical
Spectris Australia Pty Ltd
24/31 Governor Macquarie Drive
Chipping Norton
NSW 2170
T +61 (0) 2 8700 2700
F +61 (0) 2 8700 2710
info.australia@panalytical.com
www.panalytical.com

Back to CONTENTS
Do you want a simple low-cost, no-frills X-ray Powder Diffractometer for routine materials characterisation?

This is what the MMA and now the eMMA is designed for

It is lightweight, bench-top mounted, and can be moved or transported without losing alignment. The unique Harmonic Gearbox goniometer and the tube-shield are attached to the cabinets, so the whole instrument moves as one.
It has a radius of 250mm, so there is adequate resolution for separating closely spaced mineral peaks.
It can be fitted with a 10-sample loader, which is unobtrusive so can be left in place permanently if desired.
AND – it can be driven from your Laptop via the Ethernet port either directly or via a network by software which is integrated with ICDD ® databases for rapid qualitative identification.

For more information- www.diffraction.com.au
Or contact Rod Clapp at diffraction@bigpond.com

Back to CONTENTS
AXT Exhibit at AXAA 2011

AXT will have some exciting products on show in February at the AXAA. We will have a lot of working analytical instrumentation and sample preparation equipment. Bring along samples and see what the latest technology can do to improve your laboratory.

The Katanax K2 Prime

- Robust controlled heating at a touch
- Unique: Touch interface, USB, sturdy
- Accuracy: Entirely automated, perfect reproducibility
- Safety: No gases used, No toxic products released, protective shield

AXAA 2011: AXT will have a working system for demonstration. See how easy it is to program your recipe.

Haver & Boecker: Photo-Optical Particle Analysis

- Economical state-of-the-art unit for use in a laboratory environment
- Particle size and shape analysis in the measuring range from 34 µm up to 25 mm
- High Speed Automatic Measurement

AXAA 2011: Bring a sample of your material and see what your particle size and shape distribution looks like on the new HAVER CPA software.

Rigaku NexCG

- Rigaku NEX CG delivers rapid qualitative and quantitative analysis with minimal standards
- Analyze 11Na to 92U non-destructively
- Solids, liquids, powders and thin films
- Polarized excitation for lower detection limits
- Pb detection limits for aqueous samples using UltraCarry
- Simplified user interface with EZ Analysis

AXAA 2011: We will have a fully operational unit at the show so bring your samples and see how the NexCG outperforms anything else in the <100K price range.

Combined XRD & XRF on your bench top

Rigaku have launched a new combined XRD & XRF solution for Cement & Mineral Analysis. A small but powerful solution to gain both elemental and phase information.

AXT Exhibit at AXAA 2011

Both systems will be available to inspect at the AXT Booth at AXAA 2011. Come see how effortlessly you can get combined elemental and phase reporting.

**COMBINED RESULTS**

- CaO 63.35%
- SiO₂ 22.66%
- Al₂O₃ 3.99%
- Free Lime 1.75%

**Comparison Table**

<table>
<thead>
<tr>
<th></th>
<th>XRF - Supermini Cement</th>
<th>XRD - New MiniFlex II - C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>200W</td>
<td>600W</td>
</tr>
<tr>
<td>Chiller</td>
<td>Not needed</td>
<td>Small floor model incl.</td>
</tr>
<tr>
<td>Interface</td>
<td>LAN x 2</td>
<td>LAN=3</td>
</tr>
<tr>
<td>PC</td>
<td>Purchase locally (Dell)</td>
<td>Purchase locally (HP)</td>
</tr>
<tr>
<td>Detector</td>
<td>SC+FPC (P-10 gas)</td>
<td>D/teXUltra</td>
</tr>
<tr>
<td>Goniometer</td>
<td>Tube below</td>
<td>vertical, Theta 2theta</td>
</tr>
<tr>
<td>Sample Changer</td>
<td>Sample turret for 12 samples (Standard)</td>
<td>6 samples (option)</td>
</tr>
<tr>
<td>Sampling</td>
<td>Make a briquette with binder</td>
<td>Glass slide or pressed</td>
</tr>
<tr>
<td>Throughput</td>
<td>11 elements in 4 minutes (ASTM criteria)</td>
<td>3 minutes with D/teX</td>
</tr>
</tbody>
</table>


Back to CONTENTS
Sietronics Pty Ltd are pleased to announce that the company now represents TM Engineering Ltd in Australia, New Zealand and South East Asia

TM Engineering has been manufacturing a wide range of laboratory crushing and sampling products for over 35 years. Some product highlights include:

**XT1000 Auto Pulverising System.**
This unit is able to automatically pulverise up to 24 samples for:
- XRF (fusion or pressed pellet mounts)
- ICP
- AAS
- Fire Assay

**Features**
- 24 sample capacity.
- Sample weights 20 to 500gms...
- Self cleaning between samples using either air blast or quartz.
- Tool steel or tungsten carbide grinding bowls.
- Can dispense ground powder to cups or bags.
- Programmable grinding times and cleaning sequences.
- Environmentally friendly, with dust extraction facility.

Constant handling and cleaning of heavy grinding bowls is greatly minimised.

The Auto pulverising system eliminates the tedium of pulverising samples using a conventional ring mill, thereby enabling preparation staff to load the instrument, start the process and return when all 24 samples are pulverised.

**4Kg Multiple Head Pulveriser**
Fine grinding 4 kg samples in any of the following combinations.

- 1 x 4 kg bowl
- 2 x 1 kg bowls
- 4 x 250 kg bowls

**Features**
- True 4 kg capacity
- Ideal for iron, gold and other situations where fine grinding of large samples is required.
- Mechanical lifting device eliminates repetitive lifting heavy grinding head components.
- Mechanical lifting device enables more efficient use of the pulveriser as the complete grinding head is lifted allowing a second loaded head to be fitted and run while the first head is being cleaned and recharged.
- Changeover of bowl configuration is fast and simple.

Sietronics can also provide a complete range of crushers, splitters, ovens and other associated sample preparation equipment. Please see our website for more details.

www.sietronics.com.au
InXitu Terra and BTX – Portable XRD

Born from the desire to perform X-ray diffraction experiments on the Mars Science Laboratory (MSL), the inXitu team of engineers have captured the technology of the MSL program for earthbound applications in BTX, the world’s first benchtop combined XRD/XRF instrument, and the Terra the world’s first field portable combined XRD/XRF instrument. Licensed from the National Aeronautics and Space Administration as well utilizing inXitu’s own patents, BTX and Terra bring to life a new way of performing X-ray diffraction and X-ray fluorescence measurements. With its unique powder handling system combined with no mechanical goniometers or complicated moving parts, the BTX and Terra are able to provide full laboratory grade powder XRD performance at a fraction of the price.

Using a specifically developed direct excitation charge coupled device (CCD) “camera”, BTX and Terra are able to collect X-ray photon data for both X-ray diffraction and X-ray fluorescence simultaneously. This is the result of the integrated camera’s ability to detect both photon position and photon energy at the same time. With energy resolution of ~200 eV (5.9 KeV), BTX and Terra makes XRF analysis as simple as viewing the software spectrum display.

Typically, X-ray diffraction experiments require a finely ground sample which is then mounted in a sample holder. This may introduce preferred orientation of minerals/crystals in the sample. This requirement is formed by the need to ensure sufficient random orientation of the crystals in the sample. Terra introduces a patented new way of addressing this issue. With only 15mg of sample, Terra convects the sample with its integrated sample vibration chamber. By doing so, Terra is able to present all different orientations of the crystal structure to the instrument optics. This results in a superb X-ray diffraction pattern, virtually free of problematic preferred orientation effects found using more classic preparation methods.

Siemonics Pty Ltd are pleased to advise that the company is now an Authorised Distributor for the SPECTRO range of X Ray Analytical equipment.

The Spectro X Ray fluorescence analysers are state of the art, extremely innovative and employ the polarised X ray optical system which, with close coupling of the sample to the X ray tube, selected targets and detector gives optimum elemental excitation. Analytical performance for the light elements and trace elements result in new levels of sensitivity and precision.

The SPECTRO iQII X Ray fluorescence analyser is designed for demanding analytical tasks such as cement, refractories, additives including S in fuels, ceramics, major element analysis of geological samples etc.

The SPECTRO XEPOS X Ray fluorescence analyser is the top of the range instrument has extreme sensitivity for elements Na to U, the polarised X ray optical system greatly minimises backgrounds resulting in extremely low detection limits for trace elements. The XEPOS has a standard 12 position automated sample loader which can be configured to higher capacity as required.

The TURBOQUANT standardless fundamental parameters software package enables high quality analyses to be obtained from a wide range of sample types and elemental concentrations (including liquids) without resorting to standards and specific calibrations.

The iQ and XEPOS are suitable for use in research laboratories industrial laboratories and process control laboratories, in fact anywhere that high quality precision analyses are required.

Both instruments are small footprint desk top units, both are air cooled, and do not require flow counter gas. The iQ weighs only 40kg, the XEPOS weighs 80kg.

The iQII and the XEPOS are proven instruments with a significant user base in Australia, they are very competitively priced, local service and analytical support ensures that instruments can be maintained to specification and experienced XRF practitioners are available to assist with training, analytical support.

Siemonics will be pleased to discuss your analytical requirements and advise as to the suitability of the iQII or XEPOS for your laboratory.

www.sietronics.com.au