Crystallography for the next generation
Travelling labs initiative and other activities in Africa

Gérard Fauvet
Bruker enthusiastically supports the IYCr activities to increase public awareness of the science of crystallography through supporting meetings and conferences:

- **Young Crystallographers’ activities**
  In a number of countries very active groups of young crystallographers have formed or are forming because of IYCr activities. Bruker supported and will continue to support these activities by providing sponsorship and contributing with lectures or training at the events organized by IYCr.

- **Promoting interdisciplinarity**
  We are convinced that the combined efforts of the global crystallographic community will demonstrate the importance of crystallography in most technological developments and increase interest in our interdisciplinary methods
Crystallography for the next generation

Bruker proudly joins IYCr activities

Bruker enthusiastically supports the IYCr activities to further increase knowledge about crystallography through supporting Open Labs and Travelling Labs:

- **OpenLab Initiative**
  This initiative has been strongly influenced by the IUCr activities to propagate crystallography in the developing regions. Bruker customers opened and will open their laboratory, equipped with our state-of-art instruments. At these sites workshops and hands-on experiments for students and young professors will be on the agenda. Bruker facilitated contacts between the customers and the IUCr and will provide application support wherever required.

- **TravellingLab Initiative: an instrument travelling all year**
  As an additional, strong support of the IUCr’s idea of bringing crystallography to countries with no or a very small installed base, Bruker is providing free-of-charge instrumentation temporarily to a number of sites through-out the entire year and more if necessary.
Crystallography for the next generation

OpenLab (system is on-site)

During the IYCr Bruker customers with state-of-the-art instrumentation will promote crystallography

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachi, Pakistan</td>
<td>Open Lab</td>
<td>Apr 30 - May 8</td>
</tr>
<tr>
<td>Montevideo, Uruguay</td>
<td>Open Lab, newly installed</td>
<td>July 23-31</td>
</tr>
<tr>
<td>Ho Chi Minh City, Vietnam</td>
<td>Open Lab</td>
<td>Dec 10 - 12</td>
</tr>
<tr>
<td>Constantine, Algeria</td>
<td>Open Lab</td>
<td>May 9 – 14, 2015</td>
</tr>
<tr>
<td>Abidjan, Ivory Coast</td>
<td>Open Lab</td>
<td>tbd</td>
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<tr>
<td>Delhi, India</td>
<td>Open Lab</td>
<td>tbd</td>
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</tbody>
</table>

Open Lab: these events take place in research centers where crystallographic instrumentation is already operational.
Open Lab, newly installed: new installations of crystallographic instrumentation, allowing creation of new crystallographic centers.
Crystallography for the next generation

OpenLab (travelling systems)

During the IYCr Bruker promotes crystallography with state-of-the-art instrumentation

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Rabat, Morocco</td>
<td>Travelling</td>
<td>May 26 - 30</td>
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<tr>
<td>El Jadida, Morocco</td>
<td>Travelling</td>
<td>June 9 - 11</td>
</tr>
<tr>
<td>Agadir, Morocco</td>
<td>Travelling</td>
<td>June 16 - 20</td>
</tr>
<tr>
<td>Bandung, Indonesia</td>
<td>Travelling</td>
<td>Aug 18-22</td>
</tr>
<tr>
<td>Grahamstown, South Africa</td>
<td>Travelling</td>
<td>Apr/June 2015</td>
</tr>
<tr>
<td>Monastir, Tunisia</td>
<td>Travelling</td>
<td>May 14 – 17 2015</td>
</tr>
<tr>
<td>Nabeul, Tunisia</td>
<td>Travelling</td>
<td>May 20 – 23 2015</td>
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</tbody>
</table>

**Travelling OpenLab**: portable instruments will move through different locations and at each stop it will serve as the basis for a crystallographic school, including tutorials about the use of the instrument and related software.
Crystallography for the next generation

Smart X2S Single Crystal diffractometer

- Auto Crystal loading and centering
- Air-cooled APEX CCD detector
- Air-cooled Mo microsource
- Expert software for data collection
- Touch screen
- ‘Autostructure’ software
Crystallography for the next generation

D2 Phaser Powder diffractometer

- Fast desktop diffractometer
- Compact and mobile all-in-one instrument
- Theta-theta geometry w. spinner
- Standard X-tube w. integrated cooling device
- New DIFFRAC.SUITE software
- Optional Sample changer
Crystallography for the next generation

Travelling OpenLab Bandung

Bruker Open Lab - Indonesia
(18 - 22 August 2014)

Bruker AXS, Chemistry Dept. of Institut Teknologi Bandung (ITB) and Chemistry Dept. of Universitas Negeri Malang collaborate to organize a workshop named Bruker Open Lab Indonesia in conjunction with the celebration of International Year of Crystallography 2014. It is officially endorsed by International Union of Crystallography (IUCr) and UNESCO with the purpose of promoting crystallography in Indonesia, covering crystallographic research and teaching.

Lectures:
- Dr. Thanh-Ha Nguyen
  Product Support Manager SC-XRD
  Bruker AXS Inc.
- Prof. Effendy Ph.D
  Chemistry Department
  Universitas Negeri Malang
- Dr. Bambang Priyambodo
  Chemistry Department
  Institut Teknologi Bandung

Venue: Institut Teknologi Bandung (Basic Science Center A)
Jl. Ganeca 10, Bandung.

Registration:
http://goo.gl/s0Yh2X

Supported by:

Bruker
OpenLab
PT Arindo Bersinar
Crystallography for the next generation

Travelling OpenLabs Rabat, Agadir and El Jadida

- the Moroccan Ass. of Cryst. was positively surprised by the 120 participants from Morocco, Algeria, Tunisia and other francophone regions of Africa
- they received 5 days of intense training on the concepts of crystallography
- prepare their samples and run them on the two Bruker diffractometers

Prof Abdelmalek Thalal, President of the Association Marocaine de Cristallographie:

- “This experience was a great success in Morocco and had a lot of echoes in Moroccan universities”
- “We would be very happy, if we could organize yet another OpenLab with Bruker later this year”
Crystallography for the next generation

OpenLab Montevideo
Crystallography for the next generation
Travelling OpenLabs Monastir & Nabeul

<table>
<thead>
<tr>
<th>Horaire</th>
<th>Mercredi 20 mai</th>
<th>Jeudi 21 mai</th>
<th>Vendredi 22 mai</th>
<th>Samedi 23 mai</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.30-9.00</td>
<td>Ouverture</td>
<td>Maille ; Groupe d’espace ; Résolution ; Affinements (A.D)</td>
<td>Analyse Quantitative ; Rietveld (H.B)</td>
<td>Traitement des diffractions des participants (H.B), (A.D), (T.R), (K.B)</td>
</tr>
<tr>
<td>9.00-9.30</td>
<td>Présentation</td>
<td></td>
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<tr>
<td>9.30-10.00</td>
<td>Symétrie Cristalline &amp; Groupe d’Espace (H.B)</td>
<td>Analyse Qualitative ; Bases de Données (H.B)</td>
<td>Quantification de la phase amorphe (H.B)</td>
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<tr>
<td>10.00-10.30</td>
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<td>10.30-11.00</td>
<td>Pause-Café</td>
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<td>Pause-Café</td>
<td>Pause-Café</td>
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<tr>
<td>11.00-11.30</td>
<td>La production des rayons X (A.D)</td>
<td>Préparation du CIF ; Publicif ; CHECKCIF (H.B)</td>
<td>Exemple_1 (H.B) (K.B)</td>
<td>Même programme</td>
</tr>
<tr>
<td>11.30-12.00</td>
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<td></td>
<td>Pattern matching</td>
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<tr>
<td>12.00-14.00</td>
<td>Déjeuner</td>
<td>Déjeuner</td>
<td>Déjeuner</td>
<td>Déjeuner</td>
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<tr>
<td>14.00-14.30</td>
<td>La diffraction sur poudre (H.B)</td>
<td>Résolution ; Affinements ; Exemple_1 Org. (A.D) (T.R)</td>
<td>Exemple_2 (H.B) (K.B)</td>
<td>Traitement des diffractions des participants (H.B), (A.D), (T.R), (K.B)</td>
</tr>
<tr>
<td>14.30-15.00</td>
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<td></td>
<td>Quantification des phases</td>
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<tr>
<td>15.00-15.30</td>
<td>La diffraction sur monocristal (A.D)</td>
<td>Résolution ; Affinements ; Exemple_2 Inorg. (A.D) (T.R)</td>
<td>Exemple_3 (H.B) (K.B)</td>
<td>Taux de substitution TS</td>
</tr>
<tr>
<td>15.30-16.00</td>
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<tr>
<td>16.00-16.30</td>
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<td>Pause-Café</td>
<td>Pause-Café</td>
<td>Pause-Café</td>
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<tr>
<td>16.30-17.00</td>
<td>Bruker poudre</td>
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<tr>
<td>17.00-17.30</td>
<td>Bruker monocristal</td>
<td>Exemple 3 Hybride (A.D) (T.R)</td>
<td>Exemple_4 (H.B) (K.B)</td>
<td>Même programme</td>
</tr>
<tr>
<td>17.30-18.00</td>
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<td>Préparations</td>
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<tr>
<td>18.00-19.00</td>
<td>Mesures</td>
<td>Mesures</td>
<td>Mesures</td>
<td>Clôture</td>
</tr>
</tbody>
</table>
Initiative in Africa

Cameroon newly installed equipment

- Bruker has supported IUCr’s activities in Africa
- We were able to supply for free refurbished instrumentation to Dschang
- Within the IYCr, Bruker will continue supporting and strengthening these activities; for example, we are ready to install 2 instruments in Abidjan

D5005 powder diffractometer installed in Dschang

Introductory training provided by Bruker
Initiative in Africa

Installed equipment in Tunisia

• Bruker supplied 3x SIEMENS D5000 Diffractometers free of charge to:

  • Faculty of Sciences SFAX (2009)
    • Prof. Abdelhamid Ben Salah
  • University of Tunis El Manar - ISSBAT (2012)
    • prof. Rached Ben Hassen
  • Faculty of Sciences GABES (2014)
    • prof. Kamel Khirouni & prof Sahbi Alaya
Initiative in Africa

Refurbished instruments

- SIEMENS D5000/D5005 Powder Diffractometers
Initiative in Africa

Refurbished instruments

- NONIUS KappaCCD Single Crystal Diffractometers
Initiative in Africa

Refurbished instruments

- Bruker will supply above instruments for free!
- IUCr could support transport & installation costs
- Fittings are to be arranged locally (ex power supply - UPS)
- Beneficiaries’ participation is necessary for
  - New computers
  - New X-tube
  - Cryostat
  - Chiller
  - Eventual extra software licenses