



Schweizerische Gesellschaft für Kristallographie
Société Suisse de Cristallographie
Società Svizzera di Cristallografia
Swiss Society for Crystallography

Sektion für Kristallwachstum und Kristalltechnologie
Section de Croissance et Technologie des Cristaux

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Sondermarken zum Internationalen Jahr der Kristallographie 2014



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Announcement of the General Assembly of the SGK/SSCr
on 08.09.2014 at EMPA Academy in Dübendorf

On the Cover:

Pictures of the Swiss Post Stamps issued on the occasion of the
International Year of Crystallography 2014,
following the initiative of the SGK / SSCr

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The President's Page

It is a pleasure to see all the activities going on during the year of crystallography. The stamps shown on the cover were only one of the surprises. Other activities include a crystal growth competition in Geneva, bringing the very young generation into touch with crystallography. Many other events are listed on our homepage. You may also enjoy the monthly calendar sheet with recent crystallographic highlights.



We are especially looking forward to the meeting of the IUCr in Montreal in August, and also to the upcoming ECM in Rovinj/Croatia in 2015 and of course to our own event in Basel, 2016. Here, the local organizing committee (President: Katharina Fromm, Fribourg) met for the first time on Feb. 11, 2014, at the foreseen conference center in Basel. We appreciate the help of the former (ECM-28, Warwick) and future (ECM-29, Rovinj) organizers of such conferences for their support and the experience and knowledge transfer.

A central goal of our society is supporting young scientists. The report of P. Schouwink on the trimetallic systems (page 8) is an excellent feedback for us to proceed with this task. Please also encourage your own students, to take advantage of this possibility offered by SGK/SSCr.

The annual meeting 2014 will be at Empa in Dübendorf the 8th of September 2014. The scientific focus of the meeting will be "Modern Crystallography in Applied Research". The call for abstracts is open now (deadline June 30, 2014, see page 16), Please submit your abstracts!

Jörg Schefer

News for and from members

We welcome the following new members of the SGK/SSCr

Ms. Sonja Kracht, University of Fribourg
Dr. Pietro Fontana, retired
Dr. Jintang Huang, PSI Villigen
Mr. Yousef Asadi-Khiavi, Ibakh GmbH, Baden
Ms. Alba Finelli, University of Fribourg

2014 SGK/SSCr Membership Fees

We thank all the members for promptly paying their membership fees. These will remain unchanged for 2014.

SGK/SSCr full member	30	CHF / year
SGK/SSCr student member	10	CHF / year
SGK/SSCr institutional member	130	CHF / year

- Please pay the fee for 2014 by the end of June **by bank transfer** to the UBS account: IBAN CH39 0027 9279 C029 1110 0, BIC: UBSWCHZH80A
Please avoid to pay in cash at a post office.
- Several of the fees for 2013 and even a few for 2012 are still missing. A cover letter indicating the total amount due has been included with this newsletter to the members concerned.
- Institutional members will be mailed a special invoice.

Travel grants for young SGK/SSCr members

The committee will award the grants according to the following rules:

- Preference is given to PhD students
- Proof has to be given that there are no grants available covering the expenses
- A supporting letter by the supervisor of the applicant is necessary
- Applicant **MUST** be a member of our society

If you wish to apply for a travel grant, please send the above-mentioned documents to the president of the SGK/SSCr at any time. You should have been a member for at least one year before applying for a grant.

Travel grants are a good opportunity for young scientists to profit from our society during a period where they have low income. By subsequently becoming a long-term member of our society, you can return this good-will to the next generation.

Details for applications are given at:
<http://www.sgk-sscr.ch/TravelGrants.pdf>

SPG-Lehrerfortbildung - Progress in Condensed Matter Physics

- Vorträge zu aktuellen Themen der Forschung
- Besuch der Grossforschungsanlagen und des Schülerlabors iLab am Paul Scherrer Institut, 28. & 29. November 2014.

Details to be found at:
http://www.psi.ch/Ins/TeachingEN/SPG_Lehrerfortbildung_2014.pdf

International Year of Crystallography – Opening Ceremony in Paris

The International Year of Crystallography was opened with a celebration ceremony at the UNESCO headquarters in Paris, January 20-21, 2014. The opening address was given by the UN Secretary-General Ban Ki-moon. He pointed out the importance of crystallography in the past, but also for the development of drugs and new materials in the future. His video message was followed by welcome messages from Irina Bokova, Director-General of UNESCO and the IUCr president Gautam R. Desiraju. The vice-minister of higher education and research of Morocco, Soumaia Benkhaldoun, pointed out the strong involvement of her country in initiating this special year, for example by setting up the preparation meetings during the 1st North African Conference of Crystallography in Casablanca, November 2010. Former IUCr president Sine Larsen proposed that MCA (the crystallographic society of Morocco) would spearhead the process leading to the UN and involving the Moroccan representation to the UNESCO.

Two speakers focused on the milestones of crystallography: Christian Brönnimann, CEO of Dectris/Baden and Jenny Glusker. Professor Glusker presented a path through crystallography from the past to the future. A group of young crystallographers was invited to special symposia to present their special thoughts concerning crystallography. I would like to highlight two of their remarks: A student from Bangladesh showed that excellent work is possible even with limited access to state-of-the-art equipment, but sometimes it is very difficult and asked our community for additional support. Another aspect was mentioned by a Danish student: the review process for proposals and grants. He was especially asking the science advisory boards to judge more on new ideas brought-in than on “countable numbers”: As scientists of this age are at the beginning of the academic career, their research records are just starting to build-up.

The session devoted to the BRICS countries (emerging national economies) focused on the aspects of the open labs – an initiative supported by the UNESCO and sponsored by industry. The goal is locating laboratories with top-equipment around the globe to give more researches access to such instrumentation. A key point to make the initiative successful will be maintenance of such labs after the construction phase.

Another promising initiative is the SESAME synchrotron in Jordan

(<http://www.sesame.org.jo>, El Balqa). This new facility will not only offer modern X-ray instrumentation in this tense

region, but also act as a meeting point for the scientific community by organising workshops and conferences.

A full program of the opening ceremony is available at:
<http://www.iycr2014.org/opening-ceremony>



Contributed by Jürg Schefer

**Conference report:
Metal-Hydrogen Systems 2012,
EMRS Spring meeting 2013 and
Gordon Research Conference 2013**

Contributed by Pascal Schouwink,

PhD student in the group of Radovan Černý, Laboratory of Crystallography,
University of Geneva.

*International Symposium on Metal-Hydrogen Systems, Fundamentals and
Applications-October 21-26, 2012, Kyoto, Japan.*

The explored functionalities of metal hydrides nowadays reach far beyond the sorption and desorption of hydrogen in interstitial hydrides for mobile applications. It is widely recognized that intermetallic compounds cannot meet the requirements imposed by the most eminent target to ensure the transition to a low-carbon sustainable society, such as the hydrogen economy can provide. Switzerland traditionally holds a strong position in the field of metal-hydrides with the institutes of Empa and the University of Geneva. The key words gravimetric and volumetric capacity govern many of the basic targets set by the department of energy. Complex hydrides are prominent contenders especially due to their light weight per volume.

The International Symposium on Metal-Hydrogen systems is the most eminent meeting in the “metal-hydrides world”. Supported by the Swiss Society for Crystallography with a travel grant, I attended the 2012 edition, held in Kyoto, October 21-26, with an oral contribution, presenting our recent findings on increasingly complex systems to the community. MH 2012 spanned a huge spectrum of fundamentals and materials applications ranging from the more traditional research in chemical hydrogen storage to photochromic applications in thin-film sensing, electrochemical energy storage and solar thermal energy applications.

My own contribution entitled “Trimetallics: A new Chapter in Borohydride Chemistry” was aimed at the community interested in systematic structure-property relationships in the symposium “Crystal structures, thermodynamics, phase changes, and phase diagrams”. Our group has discovered the first trimetallic homoleptic borohydride systems. The initial motivation to increasing the number of chemical components was finding more efficient means of destabilizing the tetrahydroborate anion BH_4^- by the charge transfer to more electronegative cations and hence facilitate the formation of the H_2 molecule. Crystallographically, a far more interesting result is the broad spectrum of structural topologies that emerge when making the systems more complex. We have shown that the current opinion which assumes e.g. Li^+ to behave strictly ionic in a BH_4^- environment needs to be re-considered. Indeed the Li atom may act as both a 3-connected and 4-connected node in trimetallic compounds. One of the trimetallic systems introduced in my talk shows that light-metal systems, such as $\text{LiBH}_4\text{-Mg}(\text{BH}_4)_2$, may indeed form substructures when stabilized by a larger counter-cation, e.g. K^+ or Rb^+ [1]. This is surprising as the Li-Mg system has been studied extensively owed to its high gravimetric capacity, and has been shown to be eutectic. In the same trimetallic

system we have found an exciting analogy to the 4-connected, also trimetallic, aluminosilicates, amongst which we find zeolites. The principles behind the topological architecture are quite similar with respect to a negatively charged framework being stabilized by large electropositive counter-cations, suggesting these findings to represent a basis for the design of hydridic complex hydride frameworks in the future. The status that complex hydrides have in the community was reflected at MH 2012 in the number of presentations on them, especially in the symposium "Hydrogen storage and properties of non-metal hydrides" many talks were given on borohydrides and alanates, which were quite useful for my own research. These ranged from a general introduction outlining the feasibility of hydrogen storage by Andreas Züttel from Empa to comprehensive reviews such as the one given by Torben Jensen from the University of Aarhus on "Mixed-Anion and Mixed-Cation Borohydrides". Complementary to our own experimental work on the respective system I enjoyed a presentation by M. Baricco from the University of Turin, whose group has chosen a theoretical DFT-based approach to the $\text{Mg}(\text{BH}_4)_2\text{-Zn}(\text{BH}_4)_2$ system.

A second focal-point which has found a niche amongst complex hydrides is that of superionic conduction. The contributions presented at MH 2012 showed the current status of Li- and Na-, but also of Mg-based electrolytes. A summarizing and exhaustive talk titled "Ionics in Complex Hydrides" by S. Orimo from Tohoku was particularly informative explaining the actual implementation of borohydride batteries. The efforts invested on the potential Mg-electrolyte $\text{Mg}(\text{BH}_4)_2$ were discussed by R. Mohtadi from the Toyota Research Institute. Beyond that, my personal interest was in the contributions concerning the fundamentals of, in particular, solid state NMR and QENS based methods for the characterization of BH_4 -specific structural dynamics that enhance superionic conduction and also probe ionic motion itself. A series of our compounds suggests interesting mechanisms controlled by the motion and diffusion of BH_4 itself to be responsible for the occurrence of phase transitions. Under this aspect it was interesting to attend a presentation given by Alexander Skripov on nuclear resonance studies of the re-orientational motion in LiBH_4 . Also Hans Hagemann from the Department of Physical Chemistry in Geneva, whom we closely collaborate with, had an informative contribution on the investigation of structural dynamics of complex borohydrides by means of vibrational spectroscopy and DFT calculations. In another symposium the main topic was metal-hydride electrodes. These topics of MH 2012 were also of interest to other members of our group, being involved in the European project ECOSTORE, with emphasis on Li-conductivity in solid state electrolytes. My presentation included a case study on a trimetallic framework with the precise characterization of the Li-site [2], using a purposeful implementation of theoretical tools and powder diffraction to explain the results from impedance spectroscopy. In general our results on trimetallic systems were well received at MH 2012, since the community is large, however often lacking the know-how and commitment to perform detailed structural studies on complex systems of this kind, due to the cumbersome efforts this involves.

While MH 2012 is aimed at a rather specialized audience, the E-MRS meeting gathers an extremely broad community across the whole of materials research. The spring meeting 2013 was dominated largely by nanoparticles of different kinds.

The motivation to attend this conference arose from our discoveries concerning a series of borohydride materials crystallizing with the perovskite structure. Due to the synthetic approaches, much in the complex hydrides research is based on trial and error searches. The perovskite-type provides, for the first time, a genuine opportunity to actually design the compounds and search for different functionalities in a systematic way.

Our first results were presented on the E-MRS spring meeting in Strasbourg, 2013, in the symposium "Advances and enhanced functionalities of anion-controlled new inorganic materials". This symposium included theoretical and experimental approaches to design anion-controlled materials, such as oxy-hydrides and oxy-nitrides.

Borohydrides are often structurally derived from halide prototypes through subgroup relations that are based on distortions which have their origin in the tetrahedral charge distribution of the anion and its inherent dynamics. The partial substitution $\text{BH}_4^- \leftrightarrow \text{X}^-$ ($\text{X}^- = \text{Cl}, \text{Br}, \text{I}$) generates a further spectrum of ordered as well as disordered borohydride halides. Besides the resulting crystal structures, this substitution can influence hydrogen release kinetics and Li-conductivity, due to the stabilization of conducting *HT* phases, but also the control over the paddle-wheel mechanism which is prone to BH_4 .

We have recently found that multi-metallic borohydrides can easily be crystallized with the perovskite structure type. An interesting aspect of the borohydride-halides is that for the first time in this structure type, structural dynamics can be introduced on the anion position in a more or less controlled way. We suspect, that while the substitution $\text{O}^{2-} \leftrightarrow \text{N}^{2-}$ in oxy-nitrides allows to control the polarity of the octahedron, the substitution $\text{BH}_4^- \leftrightarrow \text{X}^-$ may additionally allow to get a hand on lattice instabilities via the borohydride-specific dynamics, possibly complementing various approaches in the field of improper ferroelectrics. The results are being prepared now and will be submitted soon. My talk at E-MRS was given to an audience entirely new to complex hydrides and metal-hydrides in general. The micro-symposium however was literally "tailored" to fit my contribution. The research on anion-controlled materials evolves a lot around the perovskite type. As my interest in the structure-property relationships of this type has always been profound it was a great opportunity to get a deeper insight into the more chemical research areas since our own solid state physics department in Geneva works on oxide-perovskites.

Following my talk and after that a pleasant discussion evolved, most especially concerning a perovskite-type borohydride that contains both protons and hydrides with short distances, and the prospect of the existence of oxy-borohydrides. In summary, it was a highly motivating experience to be able to contribute to and discuss with a broad community distant from the own specialized field.

I would like to conclude this report with a summary on last year's Gordon Conference (GRC) on Hydrogen-Metal Systems. It was an honour to be invited to give a talk in the Gordon Research Seminar (GRS), which precedes the actual Gordon Conference. The GRS is specifically designed for young researchers in order to promote the idealized concept of creating stimulating discussions and both formal and informal interactions between participants. It also allows the younger participants to gain confidence in an international academic environment and "warm up" prior to the prestigious main event. The GRS finished with a mentoring session by senior researchers both from academic and industrial research backgrounds. The low number of attendees and the time allocated for each of the eight talks allows the whole audience to focus on the individual contribution. This provides an ideal environment to genuinely practice animated scientific discussion and is a highly satisfying and stimulating experience usually not accessible for the younger researchers on large international meetings. On the GRS seminary my talk involved the full presentation of all our results that we have collected on the borohydride perovskites which were introduced at E-MRS 2013. The Gordon policy requires participants to speak about unpublished results, allowing for more surprising and more extensive talks. Amongst complex hydrides, our results on the perovskite compounds are acknowledged as quite creative, since our research here is conducted largely without pursuing the "holy grail", i.e. on board hydrogen storage, but oriented rather towards the studies of phase transitions and analysis of lattice instabilities. In particular BH_4 -based perovskites introduce new structural degrees of freedom by the substitution for BH_4 and invoke unexpectedly low symmetries in the high temperature phase. The latter is currently attributed to close homonuclear dihydrogen contacts, that may couple to lattice vibrations mediated by BH_4 -dynamics. During the GRC I was fortunate enough to start a collaboration with Alexander Skripov from the Russian Academy of Sciences on this subject. Initial exciting results from the perovskite series on a group of solid state phosphors based on lanthanide-luminescence were also discussed on GRS.

The topics of the GRC ranged from hydrogen storage to battery applications of metal hydrides, current trends in smart windows where hydrogen is used to change the opto-electronic properties (insulator-conductor properties) in alloys, thin film applications as optical reflectivity sensors for detection of hydrogen, plasmonic particles in medical applications, thermal energy storage for large-scale applications, etc.

Switzerland was quite well represented on the Gordon conference with contributions from the groups of Gábor Laurenczy (EPFL, Lausanne), Andreas Züttel, (Empa-ETHZ, Zürich), Hans Hagemann (Department of Physical Chemistry, Geneva) and Radovan Cerny (Department of Condensed Matter Physics, Geneva). On the GRC and GRS our lab presented various posters, on the crystal chemistry of borohydrides and on the study of lattice dynamics by means of vibrational spectroscopy and theoretical calculations, in collaboration with Hans Hagemann from the Department of Physical Chemistry in Geneva.

My personal highlights on GRC were the talks given by Ruud Westerwaal and Peter Ngene from the University of Delft on optical hydrogen detectors for the implementation in gas mixtures and liquids. I particularly enjoyed a presentation on hydrogen-sensing plasmonic nanoparticles, “Localized Plasmons as Nanoscopic Probes of Hydrogen-Metal Interactions” by Christoph Langhammer, Chalmers Technical University Sweden. Amongst the more established topic hydrogen storage a very comprehensible and detailed talk was given by Raphael Janot from CNRS Amiens, on the not so explored interactions between silicon and hydrogen, “Si-H Bonding and Hydrogen Storage Properties of Metal Silanides”.

Two talks were given by swiss attendees on the main event. First by Elsa Callini from EMPA, “TiCl₃ Addition to Alanates and Borohydrides: Catalysis or Metathesis”. This talk evolved around the spectroscopy of gaseous decomposition products in the system TiCl₃-LiBH₄. This was highly interesting to our lab as we are working on the synthesis and characterisation of transition metal borohydrides in the solid state, especially of Ti(BH₄)₃. The second swiss talk on the GRC was given by Gábor Laurenczy from EPFL “Carbon Dioxide and Formic Acid: Key Compounds in Catalytic Hydrogen Storage and Delivery”, which contrasted the many contributions on solid state hydrogen storage.

- [1] P. Schouwink, M. B. Ley, T. R. Jensen, L. Smrčok, R. Černý, *Dalton Trans.*, **2014**, accepted.
- [2] R. Černý, P. Schouwink, Y. Sadikin, K. Stare, L. Smrčok, B. Richter and T. R. Jensen, *Inorg. Chem.* **2013**, 52, 9941-9947.



Participants of the Gordon Conference on metal-hydrides in Lucca, 2013.

Announcements

School announcement:



6ème Ecole « Analyse Structurale par Diffraction des Rayons X et Contributions de la RMN à la Détermination Structurale »

7 - 11 juillet 2014, Abbaye des Prémontrés (Pont à Mousson)

<http://www.crystallography.fr/lab/fr/education/congres/nancy2014/>

Objectifs de l'école :

- Donner les bases nécessaires à la détermination de structures cristallines par diffraction des rayons X
- Acquérir des connaissances sur les méthodes de détermination et d'analyse de structures cristallines

Thèmes abordés :

- Cristallographie : Concepts fondamentaux et utilisation d'éléments de symétrie
- Diffraction des rayons X : Description et mesures
- Résolution et affinement de structures cristallines
- Analyse structurale
- Utilisation de bases des données
- Transférabilité de paramètres décrivant la distribution électronique des atomes
- Contributions de la RMN à la détermination structurale
- Ateliers pratiques : utilisation de logiciels cristallographiques

Public concerné :

Chercheurs, Enseignant-Chercheurs, Ingénieurs, Post-docs, Etudiants en thèse

Intervenants extérieurs :

Carmelo Giacovazzo (Institute of Crystallography, Italy), Richard Cooper (University of Oxford, UK), Juliette Pradon (Cambridge Structural Data Centre, UK), Charlotte Martineau (Université de Versailles, France), Pierre Fertey (Synchrotron SOLEIL, France), Eric Hovestreydt (Bruker AXS, Netherlands)

Intervenants du laboratoire CRM2 (Université de Lorraine) :

Dominik Schaniel, Massimo Nespolo, Emmanuel Aubert, Benoit Guillot, Christian Jelsch, Emmanuel Wenger

Book announcement:

***Phasing in Crystallography: A Modern Perspective*
by Carmelo Giacovazzo**

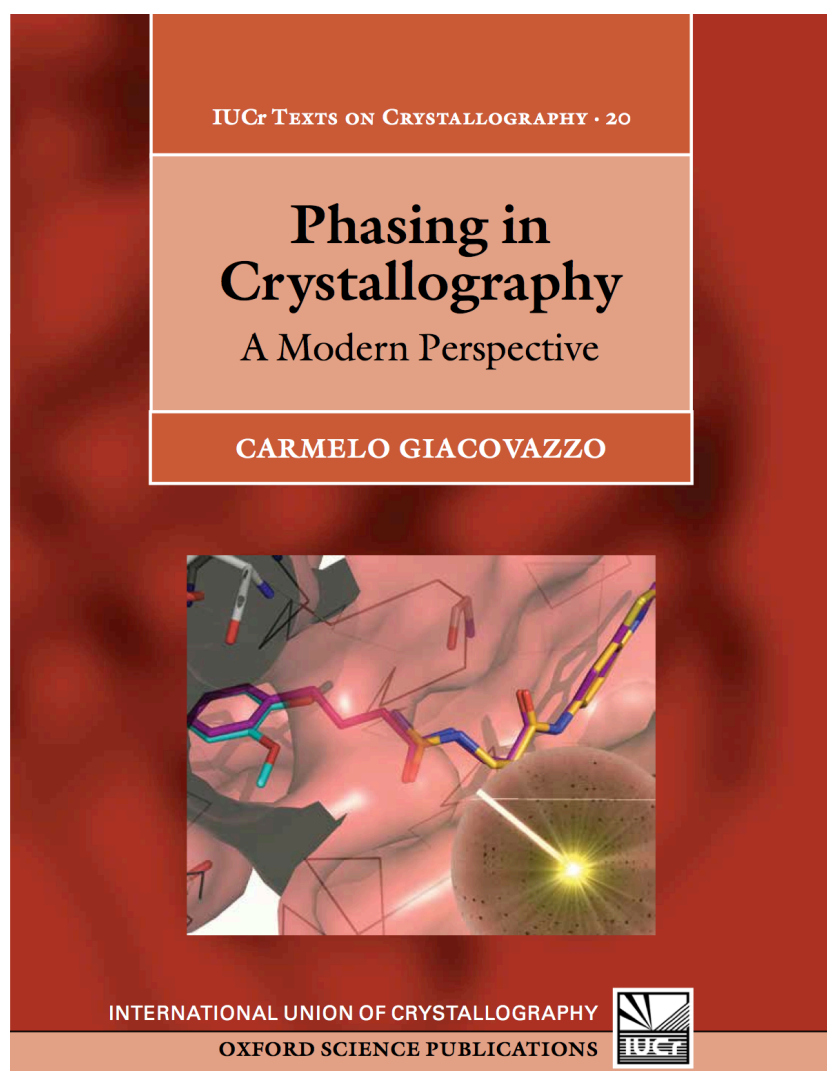
IUCr Texts on Crystallography 20, Oxford Science Publications

It is a new scientific achievement of the Italian *Istituto di Cristallografia* of CNR. The Institute has been very pleased to provide any possible facility for this work.

The textbook describes all modern crystallographic phasing methods, *ab initio* and non *ab initio* techniques, both for small and for macromolecules. The general approach is didactical: the book introduces a new logical classification of the various techniques, enables the readers to start practical applications, confines mathematical details in suitable Appendices for motivated readers.

Dr. Michele Saviano

Director of CNR - Istituto di Cristallografia



Book announcement:
The morphology of NaCl-crystals
by Pietro Fontana

The morphology of crystals is given by their structure and the growing conditions or in the words of P. Niggli from the same genotype different phenotypes are possible. The freshly printed book "Die Vielfalt der Salzkristalle" ISBN 978-3-033-04031-1 shows this behavior using the example of NaCl with 134 images based on own experiments and on the information of more than 300 references [Image 1: Front cover].



Under isometric conditions NaCl crystals are cubes. But NaCl-crystals shaped as plates ("2D growth") or needles, fibers or whiskers ("1D growth") are possible. In NaCl-solutions containing selected additives even octahedrons or rhombic dodecahedrons crystalize. Under fast growing conditions (high supersaturation) skeletal crystals are formed such as the so called hopper cubes, hopper plates or hopper needles or with higher growth rates (a still higher supersaturation) dendrites are formed. Special type is the four-sided hollow pyramid growing at the interface brine / air with stepped faces. It is used as "Fleur de Sel" in the "haute cuisine"! At the surface of the brine the crystals are agglomerated as rafts as can be seen in image 1 (length of the raft: 10 mm).

Crystals grown in the ISS under microgravity conditions in a 0.6 mm thick film of salt solution are square-shaped {100} platelets and roundish {111} disks (Lit. 1).

Halite pseudomorphs after swallowtail twins of gypsum show the typical forms of gypsum!

Lit. 1 Fontana P., Schefer J., Pettit D., J. Cryst. Growth, 324: 207 (2011)

Contributed by Pietro Fontana

**Swiss Crystallographic Association
SGK / SSCr
Annual Meeting 2014**



Monday, September 8, 2014

Swiss Federal Laboratories for Material Science and Technology
Empa AKADEMIE
Ueberlandstr. 129
8600 Dübendorf

Call for Abstracts

The 2014 annual meeting of the SGK/SSCr and general assembly will take place at the Swiss Federal Laboratories for Material Science and Technology Empa on Monday 8th of September 2014. Two invited speakers from academia, nine selected oral presentations and a poster session will show recent developments in the field. A visit of the new Center for X-ray Analytics at Empa will be organized.

More details on the website: <http://www.empa.ch/sgk>

Deadlines for Abstract submission:

Oral Presentation:	June 30, 2014
Poster Presentation:	July 31, 2014

Please use the template .doc available on the meeting website.
Abstract should be sent by e-mail to tanja.kramer@empa.ch

Registration: Please register on our webpage www.empa.ch/sgk. The meeting is free of charge (except for accommodation).

Meeting Title: **Modern Crystallography in Applied Research**

Program

9.00-10.00	Registration and Poster session
10.00-10.15	Welcome message (SGK, Empa)
10.15-11.00	Julian Stangl (Kepler University, Austria) "Crystallography at the Nanoscale: Structure and Strain in Semiconductor Nanowires"
11.00-11.15	Coffee break and Posters
11.15-12.30	Session 1 (Inorganic materials) 3 talks selected from the abstracts
12.30-13.00	Lunch and Posters
13.00-13.45	General Assembly of the SGK
13.45-14.00	Coffee break and Posters
14.00-14.45	Dr. Arndt Remhof (Empa, Hydrogen and Energy) "Structure and Dynamics of Novel Energy Materials"
14.45-16.00	Session 2 (Biomaterials and Organic Chemistry) 3 talks selected from the abstracts
16.00-16.15	Coffee Break and Posters
16.15-16.30	Poster Prize Winners announcement
16.30-17.30	Session 3 (Facilities and new instruments) 3 talks selected from the abstracts
17.30-19.00	Aperitif and Visit of the Center of X-ray Analytics

Calls for proposals

Beside normal proposals, most facilities allow urgent beam time requests.
Please check directly with the facility.

Facility	Deadline(s)	Link
SLS: Swiss Light Source All except PX lines Protein crystallography beamlines (PX)	March 15, Sept. 15 Feb. 15, June 15, Oct. 15	www.psi.ch/useroffice
SINQ: Swiss Spallation Neutron Source All instruments (regular calls)	May 15, Nov. 15	www.psi.ch/useroffice
SINQ/SLS Joint x+n proposals (MS/HRPT)	Feb. 15, 2015	www.psi.ch/useroffice
SμS: Swiss Muon Source All instruments	Dec. 9, June 10	www.psi.ch/useroffice
ESRF: European Synchrotron long term proposals short term proposals	 Jan. 15 March 1, Sept. 1	www.esrf.eu/ UsersAndScience/
ILL: Institut Laue Langevin All instruments	Feb., Sept.	www.ill.eu
FRM II: Heinz Maier-Leibnitz All instruments	May 02, 2014	user.frm2.tum.de
SNS Spallation Neutron Source Oak Ridge	various	neutrons.ornl.gov

Calendar of forthcoming meetings

(Please mail the missing information on meetings of interest to Jurg.Schefer@psi.ch)

			Abstract Deadline
2014			
Jun. 8-13	San Giovanni in Valle Aurina Italy	2014 Summer School on on "Small Angle Neutron Scattering e Neutron Imaging" http://www.sisn.it/formazione/summer-school-2014/	15.04.2014
Jun. 10-13	Bari Italy	International EXPO/SIR workshop http://www.ba.ic.cnr.it/workshop2014/	28.03.2014
Jun. 15-18	Aarhus Denmark	14 th European Powder Diffraction Conference (EPDIC-14) http://epdic14.au.dk	15.03.2014
Jul. 1-4	Villigen CH	PSI Powder Diffraction Summer School www.psi.ch/pds2014	01.06.2014
Jul. 7-14	Pont à Mousson France	6ème École Thématique de Cristallographie www.crystallography.fr/lab/fr/education/congres/nancy2014/	01.06.2014
Aug. 5-12	Montreal Canada	IUCr-2014, 23 rd General Assembly and Congress of IUCr http://www.iucr2014.org	11.02.2014
Aug. 28-Sep. 06	Pavia Italy	1st European Crystallography School 2014 http://2014.aicschool.org	16.06.2014
Sep. 1-5	Roskilde Denmark	35th Risø International Symposium on Materials Science http://www.dgm.de/dgm/mse-congress/	06.01.2014
Sep. 8	Dübendorf CH	2014 Annual Meeting of the SGK / SSCr	31.07.2014
Sep. 21-24	Jena Germany	92nd Annual Meeting: Deutsche Mineralogische Gesellschaft http://www.dmg2014.de	30.05.2014
Sep. 23-25	Darmstadt Germany	Materials Science and Engineering (MSE 2014) http://www.dgm.de/dgm/mse-congress/	17.02.2014
Oct. 5-8	Ellwangen Germany	Summer school " <i>Theory and Practice of Modern Powder Diffraction</i> " http://www.kofo.mpg.de/iycr/index.html	31.03.2014
Oct. 5-14	Grindelwald CH	10th World Conference on Neutron Radiography (WCNR-10) http://indico.psi.ch/conferenceDisplay.py?confId=2019	17.03.2014
Jun. 1-5	Knoxville USA	2014 American Conference on Neutron Scattering (ACNS) http://www.mrs.org/acns-2014/	10.03.2014
Jun. 8-13	San Giovanni in Valle Aurina Italy	2014 Summer School on on "Small Angle Neutron Scattering e Neutron Imaging" http://www.sisn.it/formazione/summer-school-2014/	15.04.2014
Jun. 10-13	Bari Italy	International EXPO/SIR workshop http://www.ba.ic.cnr.it/workshop2014/	28.03.2014
2015			
Jun. 7-20	Zurich Switzerland	Zurich School of Crystallography – Bring Your Own Crystals	16.01.2015
Jul. 1-4	Lucerne Switzerland	11th European SOFC & SOE Forum http://www.efcf.com	to be announced
To be fixed	Rovinj Croatia	ECM-29 2015 http://www.ecm29.org	to be announced
2016			
28. Aug- 01. Sep	Basel CH	European Crystallographic Association, ECM-30 http://www.ecm30.org	to be announced

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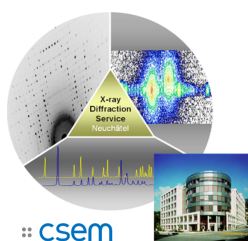
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