Rigaku
Leading With Innovation

X-ray Diffraction & Elemental Analysis

Welcome

We want to thank everyone who visited Rigaku at the 66th annual meeting of the American Crystallographic Association (ACA) at the Denver Sheraton Downtown Hotel on July 22–26, 2016. Well attended, this conference featured 36 exhibitors and more than 45 talks. We wish to congratulate the four award winners: Axel Brunger (Trueblood Award), Elspeth Garman (Fankuchen Award), Benno Schoenborn (Bau Award) and Jason Benedict (Etter Early Career Award).

For Rigaku, ACA was the venue for two important new product releases. The new Rigaku XtaLAB mini II benchtop X-ray crystallography system is a compact single crystal X-ray diffractometer designed to produce publication-quality 3D structures. It features a newly developed hybrid photon counting (HPC) detector and runs on the cutting edge CrysAlis^{Pro} software.


New Rigaku products shown at ACA 2016: XtaLAB mini II (left) and XtaLAB Synergy with HyPix-6000HE detector (right).

Rigaku also introduced the XtaLAB Synergy with the newly available Rigaku HyPix-6000HE hybrid pixel array detector (HPAD), with 100 Hz readout and zero deadtime mode, for extremely fast, high quality data collection.

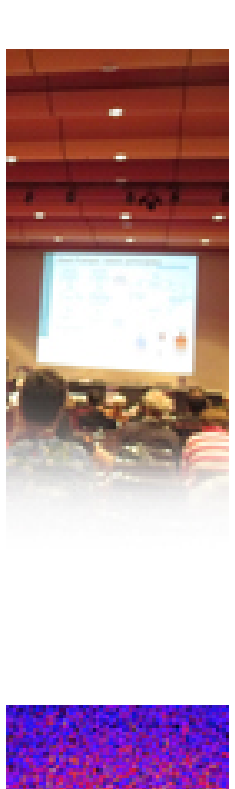
Please come and see us at the following scientific events in August: Denver X-ray Conference (Rosemont, IL), ISSPIC XVIII (Jyväskylä, Finland), X-Ray Microscopy Conference (Oxford, UK), International Union of Geological Sciences (Cape Town, South Africa) and the European Crystallographic Association Meeting (Basel, Switzerland). We promise to have new and interesting things to discuss.

Our featured Rigaku Journal article covers the "Sample preparation for X-ray fluorescence analysis III. Pressed and loose powder methods."

The video topic this month continues our "outer space" theme. Apollo 11 was the first spaceflight that landed humans on the Moon. Neil Armstrong and Buzz Aldrin landed on July 20, 1969, at 20:18 UTC. To help us understand the monumental feat of this historic journey, the Smithsonian Institution has created an interactive 3D model of the Apollo 11 command module. The primitive computer interface is frightening by the standards of even 30 years ago.

This month's featured XRD paper concerns the "Latest development of SAXS-WAXS attachment for SmartLab." Applications notes include XRD, WDXRF, and EDXRF. We offer a white paper for RAMAN technologies. Check out the book review, news and papers sections at the bottom of the page for the latest developments in materials science. Enjoy the newsletter. Enjoy the newsletter.

R.C. Tisdale, Ph.D. – Editor

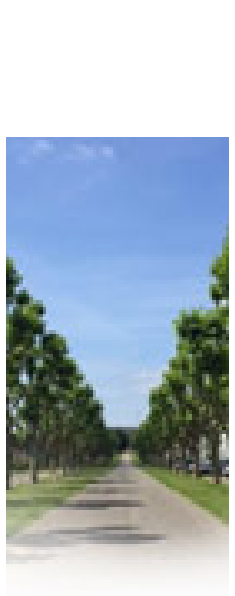


Featured XRF Rigaku Journal Article

Sample preparation for X-ray fluorescence analysis III. Pressed and loose powder methods

Rigaku Corporation

There are two main sample preparation techniques for measurement of powders with XRF—pressed and loose powder methods—neither requiring any chemical processes. In either case the proper sample preparation and accessories need to be selected to prevent breakage of the pressed powder during measurement. When a thin film for analysis surface (hereafter "sample film") or a binder is used, it is recommended to select the proper sample preparation method to minimize analysis errors of target elements. This note describes key points and considerations for sample preparation by pressed and loose powder methods. In addition, sample preparation technique for the analysis of small quantities of powder sample is introduced. **For more >**

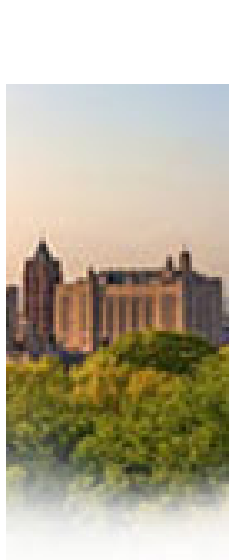


The European Powder Diffraction Conference

Report on EPDIC 15

Reported by H. Toraya

The 15th European Powder Diffraction Conference (EPDIC 15) was held on 12 – 15, June 2016 in Bari, Italy. In total, 346 scientists and exhibitors from 36 countries attended. Largely owing to the hospitality of the local organizing committee (LOC) at the Institute of Crystallography, CNR, Bari, we enjoyed scientific activities as well as Italian foods, wines and some cultural events. **For more >**

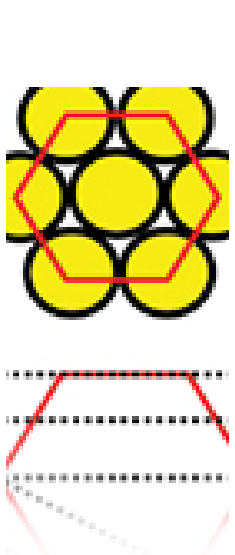


Featured XRD Article

Latest Development of SAXS-WAXS Attachment for SmartLab

By Keisuke Saito and Takayuki Konya

SmartLab is a multipurpose, fully automated horizontal X-ray diffractometer that allows many types of measurements and evaluations of materials ranging from powders to thin films. We have introduced a unique 2-D SAXS / WAXS attachment as an add-on option. An X-ray diffractometer with a 2-D detector is one of the most powerful tools for obtaining information on preferred orientation of samples such as polymer films. **For more >**

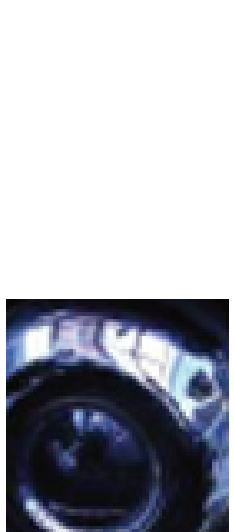


International Coordination Chemistry Conference

Report on ICCC 16

By Alexandra Griffin, Global Product Manager for SCX

ICCC 2016 was held in the city of Brest, France from July 3rd to 8th, 2016. The conference was attended by over 1000 people from various countries, including Europe, UK, Japan, India, Russia, Australia and New Zealand. **For more >**



The Rigaku Symposium on X-ray Diffraction at Yale

Report on 5th Rigaku Symposium on XRD hosted by Yale University

The Rigaku Symposium on X-ray Diffraction was held at Yale on May 19–20, 2016. The two-day event featured a diverse array of workshops, lectures, and research presentations. Attendees participated in hands-on demonstrations and tutorials; they chose from three separate short courses that focused on one of the following topics: macromolecular, materials, or small-molecule analysis and techniques. These courses were taught at Yale West Campus's new Materials Characterization Core with top-flight instrumentation. **For more >**

XRD Application Note

Elucidating the structure of mesoporous silica

Rigaku Corporation

Mesoporous silica (MCM-41) has a structure with pores oriented in a hexagonal form. Its distinguishing feature is its large specific surface area, and it has applications in areas such as production of catalyst materials and adsorbents. The unit cell of this sort of hexagonal structure is determined by measuring the d values for lattice plane spacing as shown in Fig. 1. If the observed d values of the peaks (long period peaks) derived from the periodic structure have the relative ratios 1:0.577:0.5, then it can be inferred that the structure is hexagonal.
For more >

WDXRF Application Note

Quantitative Analysis of Cast Iron using ZSX PrimusIII+ by Fusion Method

Rigaku Corporation

Cast iron is important engineering material such as for machines and automotive industry parts. The X-ray fluorescence spectrometer ZSX PrimusIII+ can cover all necessary elemental analyses from carbon for various kinds of cast iron and casting sand. This note describes the application of cast iron analysis including ductile cast iron. **For more >**

EDXRF Application Note

RoHS PE by Empirical Method

Applied Rigaku Technologies

The Restriction on Hazardous Substances initiative (RoHS) limits the allowable amounts of the toxic elements chromium, mercury, lead, bromine and cadmium in plastics and consumer goods. Energy Dispersive X-ray Fluorescence (EDXRF) is an accepted analysis technique for the rapid screening by XRF and quantification of the hazardous element according to RoHS norms. To meet the industry needs, Rigaku offers the NEX DE VS analyzer with automatic collimators and camera for sample positioning and sample image, giving QA/QC technicians the means for fast and simple screening and analysis of materials that must conform to RoHS and similar directives. **For more >**

Raman White Paper

Advantages of 1064nm Handheld Raman

Rigaku Analytical Devices

Raman spectroscopy can be used to effectively and efficiently identify and distinguish different materials. The specificity of Raman spectroscopy comes from its being a vibrational technique. Any chemical or physical changes that will change molecular vibrations will change the Raman spectrum making Raman spectroscopy highly sensitive to chemical and some physical differences in materials. **For more >**

Scientific Book Review

Cristales, Un mundo por descubrir by Juan Manuel Garcia-Ruiz and Fermín Otálora Muñoz

Cristales, or *Crystals*, is a visually evocative and concise history of crystals and crystallography and their respective roles in our modern world. Although the majority of the book is in Spanish, there is an index at the end with an English translation of the text. The English translation matches the Spanish text with no loss of fidelity. The book is the catalogue for the titular exhibition held at in Seville, Spain in 2014. **For more >**

Material Analysis in the News

News for July 2016

July 1, 2016. Frontiers of synchrotron research suggest even brighter future for materials science and engineering. Future research trends must utilise complementarity—applying multiple techniques using different quantum beams for a more efficient and effective characterization of materials.

July 1, 2016. Physicists find missing link between glass formation and crystallization. Using a clever combination of light scattering and microscopy, researchers were able to demonstrate that, within a melt of hard spheres, small compacted regions form comprising a few hundred spheres.

July 4, 2016. Researchers from Eindhoven and Berlin have succeeded in producing a thin polymer layer containing light-sensitive molecules (azo-dyes). Lying in sunlight, the thin film begins to oscillate spontaneously and irregularly.

July 7, 2016. Japanese astronaut blasts off for ISS. Takuya Onishi, 40, of the Japan Aerospace Exploration Agency, will spend four months aboard the ISS, where he will conduct experiments including releasing a small satellite from Japan's Kibo laboratory unit and conduct an experiment in Kibo to develop a new material.

July 7, 2016. An international team of researchers has reported record thermoelectric performance from rarely studied bismuth-based Zintl phases, work that could lead to a new class of thermoelectric material. The new material is non-toxic and can be used at temperatures between 500 degrees and 600 degrees Celsius, or around 1,000 degrees Farenheit.

July 12, 2016. Twelve leading scientists based in Japan were recently recognized at the Japan Research Front Awards 2016 for their groundbreaking work in eight emerging research areas. The Awards, which is in its fourth year, was organized by the Intellectual Property & Science (IP & Science) business of Thomson Reuters.

July 15, 2016. Researchers from the UK have successfully made a raised object appear flat to electromagnetic waves – meaning that they are a step closer to having a full-blown cloaking device that can hide objects. While the new findings are still far from a Harry Potter-style invisibility cloak, the successful experiment might help researchers develop better microwave and optical systems for commercial and industrial uses.

July 18, 2016. An international team, co-led by Sydney University researcher Dr Mohammad Choucair, used naphthalene as the starting point to create a new carbon-based material that enables quantum computers to work at room temperature.

July 18, 2016. A more thorough understanding of the chemistry of radioactive waste is key to treating this unwanted byproduct of winning World War II and the Cold War. To accelerate the scientific breakthroughs needed to support the Department of Energy's cleanup mission, four new Energy Frontier Research Centers have been formed. Energy Secretary Moniz announced Monday that up to $40 million dollars will go to fund the four centers for up to four years.

July 19, 2016. Three materials scientists from the Tokyo Institute of Technology have been awarded the Ceramics Grand Prize. This marks the first time in 28 years that the Prize has been given out. Professor Hideo Hosono, Professor Toshio Kamiya, and Professor Emeritus Hiroshi Kawazoe were recognized for their research into the creation and application of inorganic electronic materials.

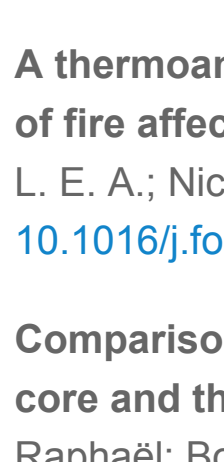
July 22, 2016. Researchers from Massachusetts Institute of Technology (MIT), borrowed ideas from metal smiths and pastry chefs, created composite materials containing hundreds of layers that are just atoms thick but span the full width of the material. The work could open up wide-ranging possibilities for designing new, easy-to-manufacture composites for optical devices, electronic systems, and high-tech materials.

July 22, 2016. A highly sensitive chemical sensor based on Raman spectroscopy and using nitrogen-doped graphene as a substrate was developed by an international team of researchers. In this case, doping refers to introducing nitrogen atoms into the carbon structure of graphene.

July 22, 2016. A super-hard metal has been made in the laboratory by melting together titanium and gold. The alloy is the hardest known metallic substance compatible with living tissues, is four times harder than pure titanium, and has applications in making longer-lasting medical implants

July 24, 2016. Renowned University of Toronto scientist Ursula Franklin dead at 94. Along with her prominence as a material sciences and metallurgy researcher, she studied the social impact of technology and pioneered the field of archaeometry.

July 25, 2016. New discoveries about spider silk could inspire novel materials to manipulate sound and heat in the same way semiconducting circuits manipulate electrons, according to scientists at Rice University, in Europe and in Singapore.



Recent Scientific Papers of Interest

Papers for July 2016

Recent Scientific Papers of Interest is a monthly compilation of material analysis papers appearing in recently released journals and publications. *See below*

Centennial of X-ray diffraction: development of an unpromising experiment with a wrong explanation. Piro, Oscar E. *Crystallography Reviews*. Jul2016, Vol. 22 Issue 3, p197-219. 23p. DOI: 10.1080/0889311X.2015.1119820.

***HiSPoD:* a program for high-speed polychromatic X-ray diffraction experiments and data analysis on polycrystalline samples.** Sun, Tao; Fezzaa, Kamel. *Journal of Synchrotron Radiation*. Jul2016, Vol. 23 Issue 4, p1046-1053. 7p. DOI: 10.1107/S1600577516005804.

Characterisation of blue pigments from ceremonial objects of the Southern Highlands in Papua New Guinea using vibrational spectroscopy and X-ray diffraction. Chua, L.; Maynard-Casely, H.E.; Thomas, P.S.; Head, K.; Stuart, B.H. *Vibrational Spectroscopy*. Jul2016, Vol. 85, p43-47. 5p. DOI: 10.1016/j.vibspec.2016.03.025.

A thermoanalytical, X-ray diffraction and petrographic approach to the forensic assessment of fire affected concrete in the United Arab Emirates. Alqassim, M. A.; Jones, M. R.; Berlouis, L. E. A.; Nic Daeid, N. *Forensic Science International*. Jul2016, Vol. 264, p82-88. 7p. DOI: 10.1016/j.forsciint.2016.03.015.

Comparison of residual stresses on long rolled profiles measured by X-ray diffraction, ring core and the sectioning methods and simulated by FE method. Bouffioux, Chantal; Pesci, Raphaël; Boman, Romain; Caillet, Nicolas; Ponthot, Jean-Philippe; Habraken, Anne Marie. *Thin-Walled Structures*. Jul2016, Vol. 104, p126-134. 9p. DOI: 10.1016/j.tws.2016.03.017.

X-Ray diffraction on large single crystals using a powder diffractometer. Jesche, A.; Fix, M.; Kreyssig, A.; Meier, W. R.; Canfield, P. C. *Philosophical Magazine*. Jul2016, Vol. 96 Issue 20, p2115-2124. 10p. DOI: 10.1080/14786435.2016.1192725.

Simplified Calibration for Total-Reflection X-ray Fluorescence. Araneda, Axel; Sanhueza, Vilma; Bennun, Leonardo. *Analytical Letters*. 2016, Vol. 49 Issue 11, p1711-1721. 11p. 1 Chart, 3 Graphs. DOI: 10.1080/00032719.2015.1118486.

Bi-alkali antimonide photocathode growth: An X-ray diffraction study. Schubert, Susanne; Wong, Jared; Jun Feng; Karkare, Siddharth; Padmore, Howard; Ruiz-Osés, Miguel; Smedley, John; Muller, Erik; Zihao Ding; Mengjia Gaowei; Attenkofer, Klaus; Xue Liang; Junqi Xie; Kühn, Julius. *Journal of Applied Physics*. 2016, Vol. 120 Issue 3, p035303-1-035303-5. 5p. DOI: 10.1063/1.4959218.

Study of adhesive bondlines in modified wood with fluorescence microscopy and X-ray micro-computed tomography. Bastani, Alireza; Adamopoulos, Stergios; Koddenberg, Tim; Militz, Holger. *International Journal of Adhesion & Adhesives*. Jul2016, Vol. 68, p351-358. 8p. DOI: 10.1016/j.ijadhadh.2016.04.006.

Grazing incidence X-ray diffraction and transmission electron microscopy studies on the oxide formation of molybdenum in a water vapor environment. Tang, Ming; Nelson, Andrew T.; Wood, Elizabeth S.; Maloy, Stuart A.; Jiang, Ying-Bing. *Scripta Materialia*. Jul2016, Vol. 120, p49-53. 5p. DOI: 10.1016/j.scriptamat.2016.04.010.

Dynamic X-ray diffraction observation of shocked solid iron up to 170 GPa. Denoeud, Adrien; Norimasa Ozaki; Benuzzi-Mounaix, Alessandra; Hiroyuki Uranishi; Yoshihiko Kondo; Ryosuke Kodama; Brambrink, Erik; Ravasio, Alessandra; Bocoum, Maimouna; Boudenne, Jean-Michel; Harmand, Marion; Guyot, François; Mazevet, Stephane; Riley, David; Makita, Mikako; Takayoshi Sano; Youichi Sakawa; Yuichi Inubushi; Gregori, Gianluca; Koenig, Michel. *Proceedings of the National Academy of Sciences of the United States of America*. 7/12/2016, Vol. 113 Issue 28, p7745-7749. 5p. DOI: 10.1073/pnas.1512127113.

Synthesis, Crystal Structure, and Physical Properties of Two Polymorphs of $CsGaSe_2$, and High-Temperature X-ray Diffraction Study of the Phase Transition Kinetics. Friedrich, Daniel; Schlosser, Marc; Pfitzner, Arno. *Crystal Growth & Design*. Jul2016, Vol. 16 Issue 7, p3983-3992. 10p. DOI: 10.1021/acs.cgd.6b00532.

X-ray fluorescence spectroscopy and Monte Carlo characterization of a unique nuragic artifact (Sardinia, Italy). Brunetti, Antonio; Depalmas, Anna; di Gennaro, Francesco; Serges, Alessandra; Schiavon, Nicola. *Spectrochimica Acta Part B*. Jul2016, Vol. 121, p18-21. 4p. DOI: 10.1016/j.sab.2016.04.007.

Practical Considerations in Trace Element Analysis of Bone by Portable X-ray Fluorescence. Byrnes, Jennifer F.; Bush, Peter J. *Journal of Forensic Sciences* (Wiley-Blackwell). Jul2016, Vol. 61 Issue 4, p1041-1045. 5p. DOI: 10.1111/1556-4029.13103.

Perspectives on heterococcolith geochemical proxies based on high-resolution X-ray fluorescence mapping. Suchéras-Marx, B.; Giraud, F.; Simionovici, A.; Daniel, I.; Tucoulou, R. *Geobiology*. Jul2016, Vol. 14 Issue 4, p390-403. 14p. DOI: 10.1111/gbi.12177.

Possibilities of low-power X-ray fluorescence spectrometry methods for rapid multielemental analysis and imaging of vegetal foodstuffs. Gallardo, H.; Queralt, I.; Tapias, J.; Guerra, M.; Carvalho, M.L.; Marguí, E. *Journal of Food Composition & Analysis*. Jul2016, Vol. 50, p1-9. 9p. DOI: 10.1016/j.jfca.2016.04.007.

First results of a novel Silicon Drift Detector array designed for low energy X-ray fluorescence spectroscopy. Rachevski, Alexandre; Ahangarianabhari, Mahdi; Bellutti, Pierluigi; Bertuccio, Giuseppe; Brigo, Elena; Bufon, Jernej; Carrato, Sergio; Castoldi, Andrea; Cautero, Giuseppe; Fabiani, Sergio; Giacomini, Gabriele; Gianoncelli, Alessandra; Giuressi, Dario; Guazzoni, Chiara; Kourousias, George; Liu, Chang; Menk, Ralf Hendrik; Montemurro, Giuseppe Vito; Picciotto, Antonino; Piemonte, Claudio. *Nuclear Instruments & Methods in Physics Research Section A*. Jul2016, Vol. 824, p452-454. 3p. DOI: 10.1016/j.nima.2015.06.038.

Spin transitions in $La_{0.7}Ba_{0.3}CoO_3$ thin films revealed by combining Raman spectroscopy and X-ray diffraction. Othmen, Zied; Copie, Olivier; Daoudi, Kais; Boudard, Michel; Gemeiner, Pascale; Oueslati, Meherzi; Dkhil, Brahim. *Journal of Applied Physics*. 2016, Vol. 120 Issue 1, p394-400. 7p. 5 Graphs. DOI: 10.1063/1.4955220.

Structure of cyano-anion ionic liquids: X-ray scattering and simulations. Dhungana, Kamal B.; Faria, Luiz F. O.; Boning Wu; Min Liang; Ribeiro, Mauro C. C.; Margulis, Claudio J.; Castner Jr., and Edward W. *Journal of Chemical Physics*. 2016, Vol. 145 Issue 2, p1-12. 12p. DOI: 10.1063/1.4955186.

Multi-speckle X-ray photon correlation spectroscopy in the ultra-small-angle X-ray scattering range. Möller, Johannes; Chushkin, Yuriy; Prevost, Sylvain; Narayanan, Theyencheri. *Journal of Synchrotron Radiation*. Jul2016, Vol. 23 Issue 4, p929-936. 7p. DOI: 10.1107/S1600577516008092.

***In situ* X-ray scattering of perovskite solar cell active layers roll-to-roll coated on flexible substrates.** Rossander, Lea H.; Larsen-Olsen, Thue T.; Dam, Henrik F.; Schmidt, Thomas M.; Corazza, Michael; Norrman, Kion; Rajkovic, Ivan; Andreasen, Jens W.; Krebs, Frederik C. *CrystEngComm*. 7/21/2016, Vol. 18 Issue 27, p5083-5088. 6p. DOI: 10.1039/c6ce00382f.

Structure of Carbon Nanotube Porins in Lipid Bilayers: An in Situ Small-Angle X-ray Scattering (SAXS) Study. Tran, Ich C.; Tunuguntla, Ramya H.; Kyunghoon Kim; Lee, Jonathan R. I.; Willey, Trevor M.; Weiss, Thomas M.; Noy, Aleksandr; van Buuren, Tony. *Nano Letters*. Jul2016, Vol. 16 Issue 7, p4019-4024. 6p. DOI: 10.1021/acs.nanolett.6b00466.

Monitoring the recrystallisation of amorphous xylitol using Raman spectroscopy and wide-angle X-ray scattering. Palomäki, Emmi; Ahvenainen, Patrik; Ehlers, Henrik; Svedström, Kirsi; Huotari, Simo; Yliruusi, Jouko. *International Journal of Pharmaceutics*. Jul2016, Vol. 508 Issue 1/2, p71-82. 12p. DOI: 10.1016/j.ijpharm.2016.04.074.

Properties of X-ray resonant scattering in the Bragg case revealed on the Riemann surface. Saka, Takashi. *Acta Crystallographica. Section A, Foundations & Advances*. Jul2016, Vol. 72 Issue 4, p472-479. 7p. DOI: 10.1107/S2053273316005404.

Small-Angle X-ray Scattering Demonstrates Similar Nanostructure in Cortical Bone from Young Adult Animals of Different Species. Kaspersen, Jørn; Turunen, Mikael; Mathavan, Neashan; Lages, Sebastian; Pedersen, Jan; Olsson, Ulf; Isaksson, Hanna. *Calcified Tissue International*. Jul2016, Vol. 99 Issue 1, p76-87. 12p. DOI: 10.1007/s00223-016-0120-z.

Structural investigations of liquid formamide by x-ray scattering, *ab-initio* calculations and molecular dynamics simulations. Fathi, Sonia; Gonzalez, Miguel Angel; Bahri, Mohamed; Nasr, Salah. *Journal of Molecular Liquids*. Jul2016, Vol. 219, p21-31. 11p. DOI: 10.1016/j.molliq.2016.01.098.

SASpy: a PyMOL plugin for manipulation and refinement of hybrid models against small angle X-ray scattering data. Panjkovich, Alejandro; Svergun, Dmitri I. *Bioinformatics*. 7/1/2016, Vol. 32 Issue 13, p2062-2064. 3p. DOI: 10.1093/bioinformatics/btw071.

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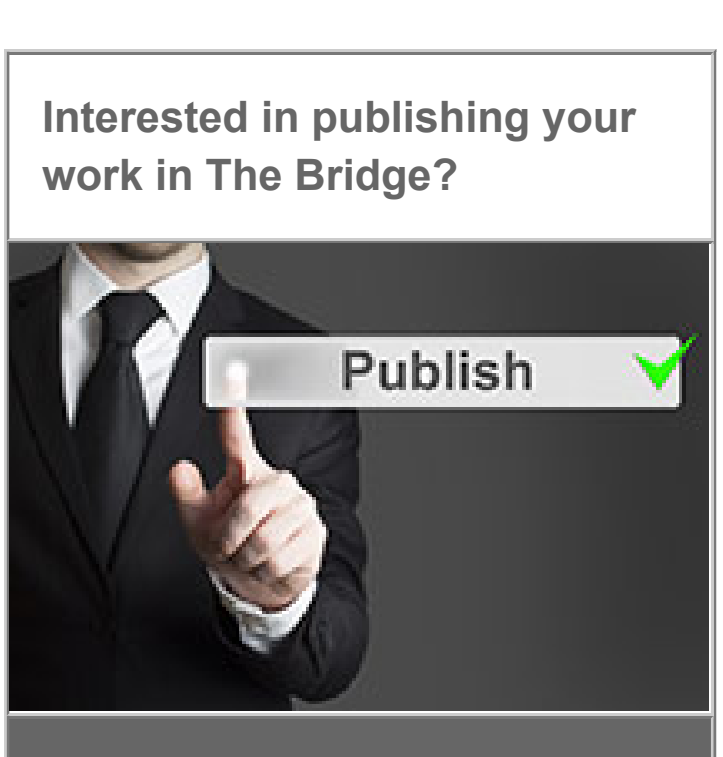

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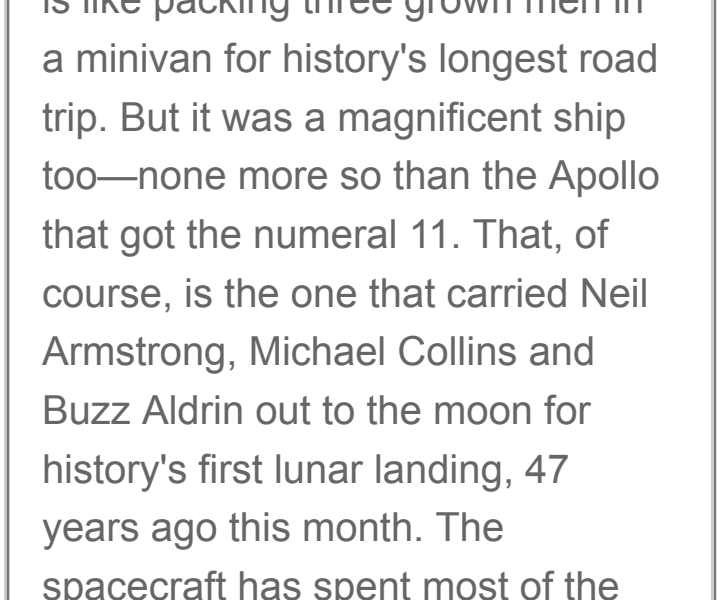
The Bridge now welcomes manuscripts, communications, and papers that describe techniques and applications of all forms of X-ray fluorescence (XRF) and X-ray diffraction (XRD, including SAXS) that are of interest to fellow scientists in industry, academia, and government. Manuscripts, in PDF format, are only accepted with the understanding that they are not commercial in nature. Authors are responsible for all statements made in their work. If illustrations or other material in a manuscript have been published previously, the author is responsible for obtaining permission to republish. Please send copy to the editor at Rigaku.newsletter@Rigaku.com

Video of the Month



Apollo 11 Command Module

There wasn't much glamour in an Apollo command module. The ship was little more than an 11-ft (3.3 m) tall conical capsule that served as home to a trio of astronauts for most of their trip to and from the moon. It had a habitable volume of just 210 cubic ft. (5.9 cu. m), which is like packing three grown men in a minivan for history's longest road trip. But it was a magnificent ship too—none more so than the Apollo that got the numeral 11. That, of course, is the one that carried Neil Armstrong, Michael Collins and Buzz Aldrin out to the moon for history's first lunar landing, 47 years ago this month. The spacecraft has spent most of the years since on display, encased in a protective plastic shell at the Smithsonian Institution's national Air and Space Museum, affording a look inside through its windows and open hatch, but providing no real sense of what it was like to be inside. Now that's being remedied, thanks to a 3D experience, created by the Smithsonian and its collaborator Autodesk, a company that specializes in cloud-based 3D design. **Watch video >**

Conferences and Workshops

Join Rigaku at future meetings

Rigaku will be sponsoring, attending or exhibiting at the following conferences and trade shows:

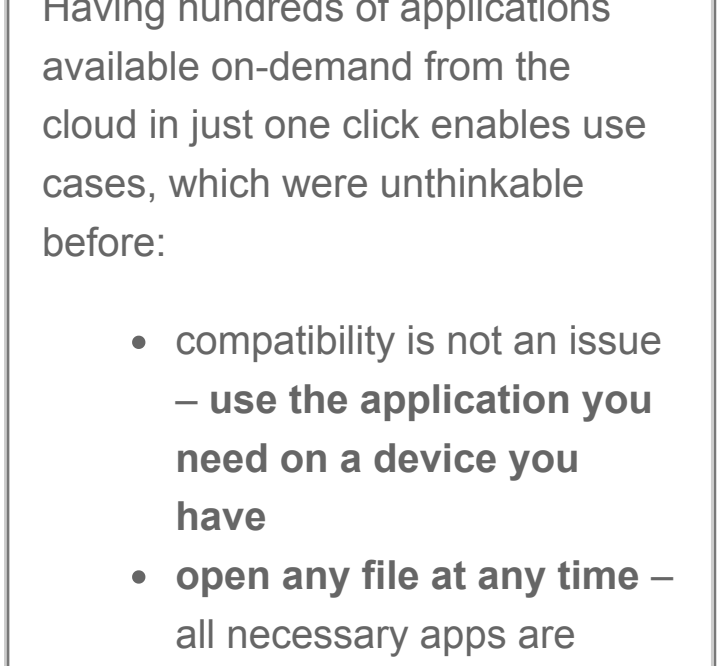
Denver X-ray Conference (DXC2016)
Rosemont, IL
August 1 – 5, 2016

International Symposium on Small Particles and Inorganic Clusters (ISSPIC XVII)
Jyväskylä, Finland
August 14 – 19, 2016

35th International Geological Congress
Cape Town, South Africa
August 27 – September 4, 2016

See the complete list >

Useful link of the Month



rollApp

rollApp builds an online application virtualization platform, which allows you to run any application on any device with just a web browser. When running on rollApp applications behave the same way as if they were installed locally. Having hundreds of applications available on-demand from the cloud in just one click enables use cases, which were unthinkable before:

- compatibility is not an issue – **use the application you need on a device you have**
- **open any file at any time** – all necessary apps are instantly available in the cloud
- run heavy workloads from mobile devices
- it is free

For more >

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