

2013 EMU MEDAL FOR RESEARCH EXCELLENCE TO DIEGO GATTA

The 2013 EMU Medal for Research Excellence was presented by the European Mineralogical Union to Giacomo Diego Gatta (Dipartimento di Scienze della Terra, Università degli Studi di Milano, Italy) during the European Geophysical Union's General Assembly in Vienna, Austria, April 27–May 2, 2014. To mark the occasion, he presented a talk entitled "Microporous Materials under Extreme Conditions." The award was given for his research, which has provided new and substantial insights into the relationships between the structure, chemistry, and elastic and thermodynamic properties of a range of Earth materials.

The awardee has conducted elegant experiments to detect protons and structurally incorporated water in nominally anhydrous minerals. He has also published in the fields of the crystallography of synthetic materials, gemology, ore mineralogy, and archaeometry. His papers on minerals proposed for nuclear waste disposal draw on insights from his work on zeolites and clearly lay out the temperature and pressure stability limits under which these minerals can immobilize specific waste elements. Diego Gatta also serves the international mineral science community as associate editor of *American Mineralogist*, *Mineralogical Magazine*, and the *Open Journal of Mineralogy*. His breadth of knowledge is critical for serving our community in these important roles. Diego's outgoing personality and boundless energy have also helped him forge links in the mineralogy communities within Europe and beyond.



Giacomo Diego Gatta (center) receiving the EMU Medal and a certificate from Wilhelm Heinrich (EMU president, left) and Ross Angel (Laudator, right)

EMU POSTER PRIZES FOR 2014

Two poster prizes were awarded by the European Mineralogical Union at the EGU General Assembly 2014 in Vienna. Mathijs Dumon (Ghent University, Belgium) received a prize for his contribution "Occurrence and formation of kaolinite-smectite mixed-layers in 'red and black' soilscapes: a case study from southwestern Ethiopia." Sina Martin (University of Basel, Switzerland) won for her



Mathijs Dumon (left) and Sina Martin

contribution "Aseismic creep of mafic fault rocks – an experimental study on the mechanical behaviour of deep-seated faults."

TAPPI LEADERSHIP & SERVICE AWARD AND DUPONT SOY POLYMERS PRIZE TO PRAKASH B. MALLA

Prakash B. Malla, vice-president of The Clay Minerals Society, has been awarded the 2014 TAPPI (Technical Association of the Pulp and Paper Industry) Coating and Graphic Arts Division Leadership and Service Award and the Dupont Soy Polymers Prize in recognition of his outstanding leadership and service to the division. TAPPI is a professional organization of more than 7500 engineers, scientists, managers, academics, and others involved in the field of pulp and paper.



Dr. Malla (holding certificate in the photo) is currently the head of Research & Development at Thiele Kaolin Company, Sandersville, Georgia, where he is involved in improving and developing kaolin products and processes for paper coating and filling applications. He is also responsible for providing technical leadership to the company. He earned a PhD from Rutgers University, where he studied the layer charge characteristics of 2:1 layer clay minerals. The layer charge is the fundamental property that controls water adsorption, swelling behavior, cation exchange, and cation fixation in these minerals. Dr. Malla received postdoctoral training at the Materials Research Laboratory of the Pennsylvania State University, where he spent 5 years developing special types of dehumidifying, nanoporous and high-surface-area materials from silica gels, zeolites, and pillared clays for natural gas-fired air-conditioning systems.

A TAPPI member since 1992, Dr. Malla is very active in TAPPI activities and has served in a variety of leadership positions. He currently serves on the Division Steering Committee and Technical Program Committee. Dr. Malla has

authored and coauthored over 40 technical papers and holds 15 U.S. patents. He also serves on the editorial boards of *Clays and Clay Minerals* and the *Journal of Porous Materials*.

The Clay Minerals Society congratulates Dr. Prakash B. Malla for his accomplishments and this professional recognition.

OTTO SCHOTT RESEARCH AWARD TO DON DINGWELL

Don Dingwell received the 13th Otto Schott Research Award during the joint meeting of the German Society of Glass Technology (DGG) and the Glass & Optical Materials Division of the American Ceramics Society, held in Aachen in May 2014. "His work on glass formation under extreme conditions like those that occur during volcanic activity provides us with valuable insights for use in industrial glass melting," noted Dr. Hans-Joachim Konz, chairman of the Board of Trustees of the Ernst Abbe Fund. The Otto Schott Research Award is presented every two years by the Ernst Abbe Fund to recognize outstanding achievements in fundamental research and technology development in the glass and glass-ceramic sciences.



Left to right, Reinhard Conradt (RWTH Aachen), awardee Don Dingwell, Hans-Joachim Konz (Schott AG), and Carlo Pantano (Penn State University)

In his research, Don Dingwell explores the role of melts and glasses in geologic processes. He documented the central role that the glass transition plays in explosive volcanism. This makes him a pioneer in the quantification of the thermodynamic and transport properties of molten silicates of both simple and complex compositions. His work on the thermo-mechanical properties of silicate glasses and melts has had a major impact on the geosciences, glass science, and glass technology. He has published more than 300 articles on the solubility of water in melts, the effects of glass composition on viscosity and thermal expansion, and viscoelastic reactions with simple and complex glasses. Dingwell has headed the Department of Mineralogy and Petrology at the Ludwig Maximilian University in Munich since 2000 and is the director of the Department of Earth and Environmental Sciences. From 2011 to 2013, he served as secretary general of the European Research Council. In 2014, he was appointed to the Executive Committee of the Deep Carbon Observatory and to the board of Academia Europaea.

Semi-Quantitative Analysis for Geological Samples

Component / Element	Certified Value	SQX Value without Matching Library
SiO ₂	75.70	72.8
TiO ₂	0.09	0.099
Al ₂ O ₃	12.08	13.5
Fe ₂ O ₃	2.04	2.1
MnO	0.021	0.020
MgO	0.06*	0.046
CaO	0.78	1.0
Na ₂ O	3.36	3.6
K ₂ O	4.99	5.8
P ₂ O ₅	-	0.0075
F	0.42	0.68
Cl	-	0.063
S	-	0.01
Cr	0.0012	0.0016
Co	-	0.0001
Ni	0.0008*	0.0029
Cu	0.0012	0.0024
Zn	0.0050	0.0060
Ga	0.0027	0.0031
As	-	0.0013
Rb	0.0325	0.037
Sr	0.0010	0.0014
Y	0.0143	0.013
Zr	0.0300	0.032
Nb	0.0053	0.0059
Ba	0.0120*	0.0096
La	0.0107*	0.013
Ce	0.0195	0.018
Nd	0.0072	0.0046
Sm	0.00158	0.0010
Dy	0.0017*	0.0021
Yb	0.00142	0.0018
Hf	-	0.0004
Pb	0.0040	0.0033
Th	0.0051	0.0045
U	0.0015*	0.0015

unit: mass%, * indicative



The need for quick determination of elements in geological samples has been increasing. Semi-quantitative analysis, with modern XRF instruments, may be performed without any reference materials. SQX is Rigaku's semi-quantitative analysis (standardless analysis) program to obtain concentrations by theoretical calculation using the fundamental parameter (FP) method.

Sample and sample preparation

A granitic rock (SARM 1 / Mintek) was used as a demonstration sample. Well-dried (2 hours at 105°C) samples were pressed to 100 kN using an aluminum sample support ring.

Measurement

Rigaku ZSX® Primus III+ was used for measurement. Sequential scan analysis from fluorine to uranium was performed followed by semi-quantitative analysis (SQX). A fixed angle measurement, one of the unique functions in SQX, was also applied for each trace element. When measurements with this function are performed, the X-ray intensities are counted at fixed angles at the peak top and searched background positions for a given time after the scanning sequence. This significantly reduces statistical counting error and improves precision for trace element analysis.

Results

SQX results and reference values are listed at left. The results by the SQX analysis are in good agreement with the reference values; however, even better results may be obtained with a "matching library."

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 website: www.Rigaku.com | email: info@Rigaku.com