

emc²⁰¹⁶ – MEETING REPORT

In 49 BC, Julius Caesar led a legion of his army across the river Rubicon in northeast Italy, which separated Cisalpine Gaul from Italy proper. This was in defiance of a law which forbade such an action, and it spawned the term “crossing the Rubicon”, a phrase that today means “passing the point of no return”. Of the 700 or so delegates who attended the second European Mineralogical Conference (emc²⁰¹⁶) in Rimini 11–15 September 2016, many crossed the river Rubicon in their journey to the seaside city of Rimini in the northeast of Italy.



Bernardo Cesare



Giuseppe Cruciani

The foundation of the European Mineralogical Conference series began with a meeting in Cambridge in 2007, ‘Frontiers in Mineralogy’, followed by a meeting in 2009 in Edinburgh, ‘MAPT – Micro-Analysis, Processes, Time’, and ultimately,

to the first European Mineralogical Conference in Frankfurt in 2012. Giuseppe Cruciani and Bernardo Cesare led the organizing team for the emc²⁰¹⁶ which was attended by delegates from 50 countries. In their welcome message, our Italian colleagues promised that “emc²⁰¹⁶ will showcase the state-of-the-art of mineralogical sciences, promoting exchange of new research results between Europeans and beyond”. The title of emc²⁰¹⁶ was ‘Minerals, Fluids and Rocks: Alphabet and Words of Planet Earth’ and was conceived to echo an aphorism by the late Charles V. Guidotti (1935–2005) “Minerals, the alphabet of geology; and rocks, the words of geology”. The conference title was intended to convey the message that dealing with mineral sciences in their broadest sense consists simply of trying to understand what the dynamic Earth is telling us and that the big picture may be reconstructed by carefully putting together the small parts.

Over the five-day program, the 28 scientific sessions (SEE BOX 1) and six plenary lectures delivered by world-renowned scientists were designed to allow cross-over between all sub-disciplines of mineralogy. The programme encouraged student presentations and interaction with field-leaders for all and was, thus, ideal in that it allowed lots of time for essential networking. The mineralogical community is especially grateful to those who helped to organize all these sessions. This work, of course, is the foundation of any successful conference.

Throughout the week, the well-attended plenary lectures were presented by **Liane G. Benning** (GFZ, German Research Center for Geosciences, Germany / University of Leeds, UK), “The Joys of Making or Breaking Bonds in Minerals: A Molecular Perspective”; **Frank Melcher** (University of Leoben, Austria), “Nb–Ta–Sn Mineralization in Pegmatites and Granites”; **Emilio Galán** (University of Sevilla, Spain), “A New Methodological Approach for the Evaluation of Soil Pollution by Trace Elements”; **Rod Ewing** (Stanford University, USA), “Radiation Effects in Minerals”; **Karen Appel** (European XFEL, Hamburg, Germany), “New Perspectives for Mineral Sciences using Fourth Generation Light Sources”; and **Marco Scambelluri** (University of Genova, Italy), “Fluids, Mass Transfer and Tectonics in Subduction Zones: What do we Learn from Serpentine?”.

Workshops and Schools

There were several workshops and schools held prior to or after the emc²⁰¹⁶ meeting. A well-attended Association of Italian Crystallography International Crystallography School entitled ‘Polymorphism, Stability and Phase Transitions in Crystals: Theory, Experiments, Applications’ was run on 7–11 September 2016 in conjunction with the Italian Mineralogical Society (SIMP). There was the one-day workshop, ‘Solid Inclusions in Minerals as Records of Geological Processes’, which

was organized by Matteo Alvaro and Ross Angel and was run at the end of the conference (16 September 2016). And, the European Mineralogical Union ran a Mineral Reaction Kinetics school, which took place 19–23 September 2016 in Vienna (Austria). Forty people attended, and a book will be published by the end of 2016 consisting of the papers presented during the school.

Attendance by Students

There was a large cohort of student delegates, many of whom were able to attend under the terms of the ‘student-volunteering programme’. The student delegates in question were very distinctive because of the brightly coloured t-shirts they wore!



Some of the student helpers (and others) at the meeting

The programme also served to promote attendance by students, an initiative which was appreciated enormously, as evidenced by the comments below:

“The student-volunteering program allows graduate students and post-docs to receive free entry and *free* accommodation and, at the same time, to experience the working of an international science conference. This not only promotes the participation of young researchers, but also helps them to develop a network of peers in the same field of study.” – Chiara Anzolini (University of Padova, Italy)

“The conference was a great opportunity for me to meet some of the best experts in the field (metal behaviour in polluted river systems under different hydrogeological conditions), and it was an honour to know and help them. Thanks to the great organisation, the attenders were able to listen to many scientific sessions. Some of the talks on environmental issues were outstanding and they inspired me and suggest new ideas to answer my research questions.” – Patrizia Onnis (John Moores University, Liverpool, UK)

“The fields still unexplored and the in-depth analysis of where the research is moving, stimulate curiosity and let you understand that your land is still a source of new discoveries and ideas.” – Norma Tallarigo (University of Ferrara, Italy)

“From a scientific and intellectual point of view, all these aspects have created a stimulating atmosphere from which I took inspiration to further expand my research horizons within the mineralogical world.” – Giada Beltrami (University of Ferrara, Italy)

“emc²⁰¹⁶ was for all of us the first conference where we participated as student helpers, and we hope that it will not be the last one. It was an exciting experience that allowed us to meet other students and discover their research fields. We were able to participate actively in the scientific sessions, showing our research through posters and oral presentations. It was so thrilling!” – PhD/Masters students in mineralogy at the University of Pavia (Italy).

Mineralogical Societies – Administrative Meetings and Joint Awards Ceremony

The running of mineralogical societies and groups, both national and international, was aided by many administrative meetings during emc²⁰¹⁶. The Italian, Spanish, French and German mineralogical societies held their annual business meetings in Rimini. In addition, books were discussed, special issues of journals were arranged, invited speakers for the next meeting were proposed, and much more – stuff that helps to make the mineralogical world go around.

There were also many society awards presented during a ceremony held on Wednesday morning, September 14th. The significance of these awards is enhanced when shared in this way with large numbers of colleagues present. Our congratulations to all recipients.



Emilio Galán
(Honorary Member of Sociedad Española de Mineralogía)

Christoph Burkhardt (Deutsche Mineralogische Gesellschaft Victor-Moritz-Goldschmidt-Preis 2016)

Sarah Incel (Deutsche Mineralogische Gesellschaft Beate-Moccek-Preis 2016)

Aurelia Zirner and Maria Stuff (Deutsche Mineralogische Gesellschaft Ramdohr-Preis 2015)



Liane Benning
(Schlumberger Award of the Mineralogical Society of Great Britain & Ireland)



Frank C. Hawthorne
(Honorary Fellow of Società Italiana di Mineralogia e Petrologia)

Kevin Rosso (Hallimond Lecturer of the Mineralogical Society of Great Britain & Ireland)

David L. Bish (Honorary Fellow of Società Italiana di Mineralogia e Petrologia)

István János Kovács (European Mineralogical Union Research Excellence Medal)



Gerhard Brey
(Deutsche Mineralogische Gesellschaft Abraham-Gottlob-Werner-Medaille in Silver)



Rodney C. Ewing (IMA 2015 Medal)



Ulrich Förstner
(Deutsche Mineralogische Gesellschaft Georg-Agricola-Medaille)

Exhibitors and Banquet

The local committee, and in particular Diego Gatta, had assembled a strong cast of exhibitors, many of whom had scientific instruments on display. Delegates and others are encouraged to follow up on enquiries made during the conference in order that these exhibitors can be encouraged to attend future such events.

Italy is, of course, the home of social intercourse, where people gather to enjoy good food, good wine and to talk about the important points of the day. Rimini, being a tourist resort, is replete with good restaurants, and at all price ranges, that accommodated the many hungry delegates during the week. Colleagues in Italy also arranged



Box 1 THE 28 SESSIONS HELD AT emc²⁰¹⁶

1. Diamonds: Open Windows in the Earth's mantle
2. Evolution of the Earth's Mantle and Primitive Magmatism through Time
3. Volatiles in the Deep Earth: Storage, Mobility and Implications
4. Fluids in the Crust
5. The Cycling of Hydrogen, Carbon, and Mobile Elements in the Subduction Factory
6. Metamorphism, Crustal Melting and Granite Magmas from Start to Stop and from Inclusions to Intrusions
7. From Deep Magmatic Processes to Volcanic Eruption
8. Diffusion, Mineral Reaction and Deformation Mechanisms from Low to High Temperatures: Flow and Brittle Processes of the Earth's Interior
9. Inclusions in Minerals as Record of Geological Processes: New Analysis Methods and Application
10. Mineral Reaction Kinetics: Microstructures, Textures, Chemical and Isotopic Signatures
11. Reading and Understanding Metamorphic Rocks
12. Clays, Zeolites and Nanostructured Minerals: From Mineralogy to Applications in Industry and Environment
13. Ores, Minerals and Geomaterials in Industrial Processes and Human Activities
14. Advances in Computational and Experimental Mineralogy: A Journey from the Surface to the Deep Earth and Beyond
15. Structural Behaviour and Energetic Properties of Minerals
16. New Minerals, Modular Structures and Mineral Groups
17. Mineral Diversity, Complexity and Evolution
18. Planetary Materials: From Dust to Planets and Early Earth
19. Gem Materials
20. High-tech Metal Minerals in Europe
21. Mineralogy, Geochemistry and Valorization of Industrial and Mining Wastes
22. Platinum Group Minerals and Accessory Minerals: Development in their Characterization
23. The Future of Critical Metals: Mineralogy, Metallogenesis and Geometallurgy
24. The Petrology-Geochronology Connection
25. Biogeochemical Interfaces and Environmental (Bio)Mineralogy
26. Mineral Hazards. The Environmental and Human Health Problem Represented by Raw and Man-processed Mineral Phases
27. Mineral Sciences for the Understanding of Cultural Heritage
28. Museums and Teaching Mineral Sciences to New Generations

for a delightful conference banquet at Casa Zanni where the red wine flowed until the small hours. Lunch and coffee breaks were also amply stocked with drinks and food for the travelling army that is the EMC!

In summary, emc²⁰¹⁶ was a resounding success, due largely to the efforts of the local organizing committee, and in particular Giuseppe Cruciani and Bernardo Cesare. Our Italian colleagues certainly kept their promise! The next EMC event will be in 2020 and is already being discussed with interest from a number of possible hosts. And a location for 2024 is already being mooted. It appears that EMC has indeed crossed the Rubicon and passed the point of no return for ever-increasing success.

Kevin Murphy, Klaus-Dieter Grevel, Hans-Peter Schertl,
and the many people who posted photographs
to the EMC Facebook page

IMA at emc²⁰¹⁶

At the 2nd European Mineralogical Conference (emc²⁰¹⁶) held in September 2016 in the beautiful Adriatic resort town of Rimini (Italy), Professor Rod Ewing (University of Michigan, USA) was awarded the IMA Medal of Excellence for 2015 (*Elements*, v11 p 300) and gave a plenary lecture on radiation effects in minerals. Also at the conference, the IMA inaugurated its PhD Student Award, which is aimed at supporting young talent in mineralogy and related disciplines (*Elements*, v12, p 133). In addition to a certificate, each awardee receives a travel grant to attend a major international meeting. In 2016, the IMA Council selected three students to sponsor, based on achievements and contributions, to present their research at emc²⁰¹⁶. The recipients were Petra Jakubová from Masaryk University (Brno,

Czech Republic), Mattia Luca Mazzucchelli from the University of Pavia (Italy) and Liene Spruzeniece from Macquarie University (Sydney, Australia). Petra's research, which was presented at the session "Inclusions in Minerals as Record of Geological Processes", is concerned with the origin of microdiamonds from the North Bohemian granulites (Czech Republic) and involves an impressive array of advanced analytical techniques. Mattia's work also involves high-pressure inclusions but his main objective is to expand the current limits of elastic geobarometry using numerical methods. Liene's research integrates experiments, field studies and electron microscopy to explore fluid-rock interaction in complex systems. Her latest experimental findings on symplectite growth mechanisms were presented at the session "Reading and Understanding Metamorphic Rocks".



IMA Past President Sergey Krivovichev (FAR LEFT) and 1st Vice President and Chair of the PhD Student Award Committee Patrick Cordier (FAR RIGHT) with the recipients of the IMA PhD Student Award for 2016: (L TO R) Petra Jakubová, Mattia Luca Mazzucchelli and Liene Spruzeniece.

The IMA also held two business meetings at Rimini. Patrick Cordier was elected 1st vice president of the IMA and Catherine McCammon and Mark Welch are two new councillors. Sergey Krivovichev passed on the

presidential gavel to Peter Burns; Sergey is now past president. We say "Thank You!" to Walter Maresch, who is retiring as past president and who has served the IMA for many years.



The IMA council members at emc²⁰¹⁶ in Rimini: Anhuai Lu (councillor), Catherine McCammon (councillor), Hans-Peter Schertl (secretary), Patrick Cordier (1st vice president), Peter Burns (president), Walter Maresch (former past president), Marco Pasero

(councillor), Sergey Krivovichev (past president), Jane Gilotti (councillor), Stuart Mills (2nd vice president). Not present: Bob Downs (treasurer), Anton Chakhmouradian (communication officer), Mark Welch (councillor)

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Be sure to join us at future IMA General Meetings. In August 2018, the 22nd General Meeting will be held in Melbourne, Australia (www.ima2018.org). In 2022, the 23rd General Meeting will take place in Lyon, France (www.ima2022.fr).

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