

# COMMISSION ON ORE MINERALOGY

## International Mineralogical Association

<http://www.gsf.fi/domestic/com/ima-com.htm>

### **Annual Report, 20<sup>th</sup> December 2010**

This report covers aspects of IMA-COM activities since the date of the last annual report (December 2009).

#### **COM Officials 2010-2014**

The following nominations of officials to serve COM in the period 2010-2014 were accepted at the IMA-COM Business meeting held during the IMA meeting in Budapest, Hungary, August 2010:

Chairman: Chris Stanley, [c.stanley@nhm.ac.uk](mailto:c.stanley@nhm.ac.uk)

Vice-Chairman: Andy McDonald, [amcdonald@laurentian.ca](mailto:amcdonald@laurentian.ca)

Secretary: Federica Zaccarini, [Federica.Zaccarini@unileoben.ac.at](mailto:Federica.Zaccarini@unileoben.ac.at)

#### **Objectives and activities of COM**

The Commission on Ore Mineralogy of the International Mineralogical Association was set up in 1962 to serve the interests of ore mineralogists in universities, research institutions, museums, and the minerals industry across the world. Our goals are to promote ore mineralogy within the scientific community, to train fellow members in investigative skills through a series of short courses, and to support the activities of other IMA commissions by providing advice and expert opinion on issues related to our fields of research. Through its regular short courses, regional meetings, scientific sessions, other symposia and field excursions, as well as its website, COM offers a platform to ore mineralogists to share their knowledge with others, exchange information, and to speak with a collective voice on issues that affect our branch of science. As one of the commissions of IMA, the COM supports the goals of international cooperation and collaborative research in pure and applied mineralogy.

#### **Financial support**

COM has no direct financial support for its activities.

#### **Interface with IMA activities and other international projects**

COM participates in all major IMA events and interacts with other commissions, particularly CNMMN and CAM. COM is also enthusiastically involved in International Geoscience Project (IGCP) 486. COM worked with the committee of the 20<sup>th</sup> General meeting of the International Mineralogical Association, Budapest, August 2010, in the organization of two scientific sessions and one short course.

## COM activities in 2010

The last business meeting took place during the 20<sup>th</sup> General meeting of the International Mineralogical Association, Budapest, August 2010. Minutes will be available on the commission webpage shortly: <http://www.gsf.fi/domestic/com/ima-com>.

During this meeting the new officials to serve COM in the period 2010-2014 were elected. The decision to update the list of national representative was taken. The list of the national representative has been updated on December 2010. (see the appendix at the end of this report). Following a series of e-mail messages with the IMA Secretary-General, it seems that regarding the National Representatives (NR), it is clear that to have NR from countries not affiliated to IMA is not against the IMA Constitution. Therefore, in accordance with "Article 13c - Chairmen of Working Groups, thus appointed, will be entitled to invite such other members of the Working Group as they deem appropriate. They should aim to build a nucleus of enthusiastic experts in the field of the Working Group, while endeavouring to maintain as wide an international membership as possible." and the spirit of inclusivity, the officers are agreed that if there are no serious expressions of dissent we invite the representatives who have volunteered themselves in the absence of actual or credible national nominating organizations to be NRs with full voting rights on our Commission.

COM activity in 2010 has focussed on the organization of the following scientific sessions and short course for the 20<sup>th</sup> General meeting of the International Mineralogical Association, 21-27 August 2010, Budapest, Hungary.

Scientific sessions:

### 1) EG52: Platinum group minerals in the new millenium

**Convenors:** *Andrew M. McDONALD, Aberra MOGESSIE, Oskar THALHAMMER*

**Sponsored by:** IMA Commission on Ore Mineralogy (IMA-COM)

#### **Brief description of the session:**

A session dedicated to expanding our current state of knowledge on a variety of topics relating to the crystal chemistry, synthesis, geochemical character, geological occurrence and beneficiation of platinum group minerals.

#### **Details:**

Platinum group minerals, the important reservoirs of platinum-group elements at the earth's surface, are represented by rather limited number of species (<110). Given the high demand for PGE from the technology sector owing to their application as catalysts, biomedical tools (e.g., anti-cancer drugs) resistance to corrosion, high electrical conductivity, etc., the interest in better understanding the chemistry, mineralogy and geological occurrences of these minerals has been growing at an exponential rate. While it has been more than 250 years following the discovery of the first PGM (platinum, from the Choco district, Columbia) and scientists have come to better understand certain facets regarding the formation and redistribution of PGE in mafic to ultramafic environments in the form of PGM, a tremendous number of questions still remain unresolved. For example, is the occurrence of PGM nanoparticles entirely responsible for the incredible variety of PGM that may be found growing as submillimetric aggregates in chromites from S-poor, ultramafic environments? What are the mechanisms by which PGM in sulphide-saturated systems crystallize? How does hydrothermal alteration impact on the chemistry of PGM that develop? With so many of the known PGM being poorly characterized and lacking crystal-structure data, how diverse is this group? As we still know little regarding chemical variations that occur in PGM solid solutions, how does this impact on defining the conditions under which synthetic PGM are generated? Do all PGM necessarily behave under the same beneficiation processes? This session is broadly directed at all researchers interested in PGM from a large number of perspectives. We invite perspective participants who are working on the chemistry, mineralogy, synthesis and beneficiation of platinum group minerals, along with those studying the myriad of geological occurrences of these minerals

(mafic-ultramafic, hydrothermal, alteration) to consider contributing presentations to the session. Given that world demand for PGE still remains high, that mechanisms relating to the manner in which PGE are fractionated and redistributed from the mantle to the crust is still lacking, and that knowledge of the types and variety of PGM that accommodate PGE remains poor, we anticipate considerable interest in this session. It should also be clearly stated that the overriding goal of this session is to provide a forum that will stimulate discussion, debate and a broader appreciation for the complexities associated with PGM.

## **2) GP81: Volcanoes: The mineral factory**

**Convenors:** *Alexandru SZAKÁCS, Masaaki SHIMIZU, Yuri TARAN*

**Sponsored by:** IMA Commission on Ore Mineralogy (IMA-COM)

### **Brief description of the session:**

The session addresses all topics related to mineral occurrence and genesis in volcanic environments, including rock-forming minerals, minerals of the hydrothermal alteration, ore minerals and minerals formed from volcanic and post-volcanic exhalations.

### **Details:**

Volcanoes and their vicinity represent a very special geologic environment for mineral genesis on Earth. Magmatic processes related to magma ascent, storage and eruption operate at various levels of the volcanic system and result in the formation of both intrusive and extrusive rocks consisting of common rock-forming major and accessory minerals of a wide spectrum of compositions, crystal sizes and morphology depending on magma composition and evolution. They are important carriers of information about deep processes of magma evolution, as well as eruptive processes. Mineral physics and chemistry studies are indispensable tools of the modern volcano research. Volcanic edifices and their shallow basement commonly host hydrothermal systems displaying a large spectrum of features related to hydrothermal alteration of both magmatic and non-magmatic rocks, and to ore-forming processes, all of them resulting in complex mineral assemblages. Contributions related to all aspects of mineral genesis in the volcano hydrothermal system are welcomed. Gas-phase emanations of erupting, quiescent or even extinct volcanoes are the source of another important class of mineral genetic phenomena. Volcanic sublimates may contain sometimes exotic populations of rare minerals governed by gas compositions and local deposition conditions

### **Short course**

WSC5: Mineralogy, geochemistry and ore deposits of platinum group elements (PGE)

### **Details:**

**Date:** August 28-September 1 (post-conference)

**Venue:** Dept. of Applied Geological Sciences and Geophysics, University of Leoben (Austria)

**Sponsors:** IMA-COM, NAWI-Graz, University Centre of Applied Geosciences Styria (UZAG)

**Contact person:** Federica Zaccarini (University of Leoben, [Federica.Zaccarini@unileoben.ac.at](mailto:Federica.Zaccarini@unileoben.ac.at))

**Invited speakers:** R. Bakker, G. Garuti, M. Ohnenstetter, A. McDonald, T. Meisel, A. Mogessie, F. Molnár, M. Tredoux, O. Thalhammer, F. Zaccarini

**Length (days):** 4

**Brief summary:** The course will include:

- Description of the most important PGE deposits, their genesis, mineralogy and geochemistry
- Practical sessions: optical microscopy, electron microprobe, Raman spectroscopy
- Field trip to the mafic-ultramafic massif of Kraubath

**No. of sessions:** to be announced later

**No. of participants:** maximum 25

**Web:** <http://institute.unileoben.ac.at/mineralogie/IMA/Home.html>

More than 20 scientists, from Europe, Asia, Africa, Australia and Latino America, participated to this short course

**COM's website** is hosted at the Geological Survey of Finland; <http://www.gsf.fi/domestic/com/ima-com.htm>. The website provides a central source of information on COM activities, with a

mission statement, a brief history of the commission, list of national representatives, details of past and future activities and publication reports. During 2010, the website has been updated. Regarding COM website development, the person responsible, Kari Kojonen, during the Budapest meeting, explained that the COM virtual ore microscopy is still under construction. Several national representatives present at the meeting, offered their help for the development of this important aspect of the COM web site. Kari Kojonen will be sending instructions to all the national representatives regarding format and accompanying descriptions, as soon as possible.

### ***Report of COM Selenide-Tellurides***

A draft report of the Selenide-Telluride' sub-commission was presented by Kari Kojonen during the Business Meeting of IMA-COM (Budapest, 2010).

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## **SUMMARY OF THE COM ACTIVITIES (2006-2009)**

### **COM activities in 2006**

- 1) A business meeting of IMA-COM was held during the IMA meeting in Kobe, Japan, July 2006.
- 2) The COM website remains the main vehicle for communication with members. *COM website* COM's website is hosted at the Geological Survey of Finland; <http://www.gsf.fi/domestic/com/ima-com.htm>. The website provides a central source of information on COM activities, with a mission statement, a brief history of the commission, list of national representatives, details of past and future activities and publication reports. During 2006, the website has been updated.
- 3) *Scientific session during the IMA meeting in Kobe, Japan, July 2006*  
Session 16: 'Mineralogy of Ore Deposits'. Conveners were: Nigel J. Cook (Norway), Kari Kojonen (Finland), Hiroharu Matsueda (Japan), Roland K. W. Merkle (South Africa) and Masaaki Shimizu (Japan). A total of 34 abstracts were accepted and published in the Program and Abstracts volume; 17 oral presentations were given (Wednesday 26th July) and 17 poster presentations were given (Thursday 27th July).
- 4) *Report of COM sub-commission on sulphosalts*  
The sulphosalt sub-commission of COM (leaders Yves Moëlo and Emil Makovicky) presented the final draft manuscript of their full-length report during the Business Meeting in Kobe. The final version will be submitted for publication in leading mineralogical journals and an abridged version will be made available for download from the COM website in the near future.

### **COM activities in 2007**

- 1) No business meetings of IMA-COM were held during 2007. The next business meeting is scheduled to take place during the 33rd IGC in Oslo.
- 2) COM activity in 2007 has focussed on the scientific sessions planned for *33rd IGC-2008*:
  - Metals in the Earth: from vital resource to environmental hazard  
(organized by CAM, COM and WGEM). Conveners: David Vaughan, Dogan Pactunc, Kari Kojonen
  - 2. Au-Ag telluride-selenide deposits (organised by COM) Conveners: Kari Kojonen, Nigel Cook
  - 3. Platinum group mineralogy organised by IGCP 486 and COM) Conveners: Andy McDonald, Kari Kojonen
- 3) IMA-COM has also held discussions about sessions that the working group will organise at the *2010 IMA General Meeting* in Budapest. One suggestion that has received significant interest is: 'Automated Technologies in Ore Mineralogy'.
- 4) *COM's website* is hosted at the Geological Survey of Finland; <http://www.gsf.fi/domestic/com/ima-com.htm>. The website provides a central source of information on COM activities, with a

mission statement, a brief history of the commission, list of national representatives, details of past and future activities and publication reports. During 2008, the website has been updated.

#### 5) *Report of COM sub-commission on sulphosalts*

The sulphosalt sub-commission of COM (leaders Yves Moëlo and Emil Makovicky) had presented the final draft manuscript of their full-length report during the Business Meeting in Kobe (2006). A final version is currently in press in *European Journal of Mineralogy*, to appear in December 2007 /January 2008.

### COM activities in 2008

1) The business meeting took place during the 33rd IGC in Oslo.

2) COM activity in 2008 has focussed on these scientific sessions organized for *33rd IGC-2008*:

- Metals in the Earth: from vital resource to environmental hazards (jointly with CAM). Conveners: David Vaughan, Dogan Pactunc, Kari Kojonen
- 2. Au-Ag telluride-selenide deposits (jointly with IAGOD and IGCP 486) Conveners: Kari Kojonen, Nigel Cook
- 3. Platinum group mineralogy. Conveners: Andy McDonald, Kari Kojonen

3) IMA-COM has proposed the following session for the next *2010 IMA General Meeting* in Budapest. 'Automated Technologies in Ore Mineralogy' (Conveners: Roland Merkle, Alan Butcher and Hanna Horsch).

These additional sessions have been also proposed 1) PGM (tied in to the Leoben short course 2) gold session (possibly focusing on recent advances in the understanding of 'invisible' gold?), 3) session on 'Ore mineralogy of magmatic-hydrothermal deposits in the Alpine-Carpathian-Balkan area' and 4) 'Modular structures in ore minerals'. Offers of these additional sessions should be communicated to the local organizing committee by the end of 2008.

4) *COM's website* is hosted at the Geological Survey of Finland; <http://www.gsf.fi/domestic/com/ima-com.htm>. The website provides a central source of information on COM activities, with a mission statement, a brief history of the commission, list of national representatives, details of past and future activities and publication reports. During 2008, the website has been updated. Regarding COM website development, the person responsible, Kari Kojonen, during the Oslo meeting, explained that the COM virtual ore microscopy is still under construction. Andy McDonald, Hassan Helmy and other national representatives present at the meeting, offered their help for the development of this important aspect of the COM web site. Kari Kojonen will be sending instructions to all the national representatives regarding format and accompanying descriptions, as soon as possible.

#### 5) *Report of COM sub-commission on sulphosalts*

The final report of the 'Sulphosalt' sub-commission (led by Yves Moëlo and Emil Makovicky) was published in *European Journal of Mineralogy* in February 2008.

#### 6) *Report of COM Selenide-Tellurides*

A draft report of the 'Selenide-Telluride' sub-commission will be prepared for the next Business Meeting of IMA-COM (Budapest, 2010).

### COM activities in 2009

1) No business meetings of IMA-COM were held during 2009.

2) COM activity in 2009 has focussed on the organization of the following scientific sessions and short course for the 20<sup>th</sup> General meeting of the International Mineralogical Association, 21-27 August 2010, Budapest, Hungary.

#### Scientific sessions:

- EG52: Platinum group minerals in the new millenium  
Conveners: *Andrew M. McDONALD, Aberra MOGESSIE, Oskar THALHAMMER*  
Brief description of the session:  
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relating to the crystal chemistry, synthesis, geochemical character, geological occurrence and beneficiation of platinum group minerals.

- GP81: Volcanoes: The mineral factory

Convenors: *Alexandru SZAKÁCS, Masaaki SHIMIZU, Yuri TARAN*

Brief description of the session:

The session addresses all topics related to mineral occurrence and genesis in volcanic environments, including rock-forming minerals, minerals of the hydrothermal alteration, ore minerals and minerals formed from volcanic and post-volcanic exhalations.

### **Short course**

WSC5: Mineralogy, geochemistry and ore deposits of platinum group elements (PGE)

Date: August 28-September 1 (post-conference)

Venue: Dept. of Applied Geological Sciences and Geophysics, University of Leoben (Austria)

Contact person: Federica Zaccarini (University of Leoben, [federica.Zaccarini@unileoben.ac.at](mailto:federica.Zaccarini@unileoben.ac.at))

Convenors: Abera Mogessie, Christoph Hauzenberger, Oskar A.R. Thalhammer, Federica

**3)COM's website** is hosted at the Geological Survey of Finland; <http://www.gsf.fi/domestic/com/ima-com.htm>. The website provides a central source of information on COM activities, with a mission statement, a brief history of the commission, list of national representatives, details of past and future activities and publication reports. During 2010, the website has been updated. Regarding COM website development, the person responsible, Kari Kojonen, during the Oslo meeting, explained that the COM virtual ore microscopy is still under construction. Andy McDonald, Hassan Helmy and other national representatives present at the meeting, offered their help for the development of this important aspect of the COM web site. Kari Kojonen will be sending instructions to all the national representatives regarding format and accompanying descriptions, as soon as possible.

### **4) Report of COM Selenide-Tellurides**

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## **Workplan for 2010, with perspectives for 2011-2012**

In the next term (2010-2012), COM will continue to organize scientific sessions within large international scientific meetings. COM will redouble its efforts to organise short courses where they have not been held previously (particularly in developing countries).

### **COM Short courses and sessions**

In the following, a selection of congresses and short courses of potential interest for COM, are listed:

1) ECROFIXXI, August 8-11, 2011, Leoben, Austria  
<http://ecrofixxi.unileoben.ac.at/Home.html>

2) GOLDSCHIMDT 2011, August 14 - 19, 2011, Prague  
<http://www.goldschmidt2011.org/themes>

Theme 11: Earth's resources : Ores (Jan Pasava, Keiko Hattori)

**11f:** Natural and Synthetic Platinum-Group Minerals (PGM): Tracers of Processes at High and Low Temperatures

Convenors: Oskar Thalhammer, Federica Zaccarini, Anna Vymazalova

**20h:** Abundance and Distribution of Critical High-Tech Metals in Ore Minerals

Convenors: F. Michael Meyer, Jens Gutzmer

3) XIV Congreso Latinoamericano de Geología, 29 de agosto-2 de septiembre de 2011, Medellín (Colombia)

<http://www.14clg.com/site/index.php?lang=es>

*Sessions*

#### **10. Exploración de minerales, contribuciones a los depósitos minerales y metalogénesis**

Coordinadores

Gloria PRIETO RINCÓN – INGEOMINAS

Juan Carlos MOLANO MENDOZA – Universidad Nacional de Colombia, Bogotá

Reinaldo BRITTO – *Companhia de Pesquisa de Recursos Minera (CPRM)*

Luis Carlos MANTILLA FIGUEROA – Universidad Industrial de Santander (UIS)

Oswaldo ORDOÑEZ CARMONA – Universidad Nacional de Colombia, Sede Medellín

#### **14. Mineralogía aplicada y de mena**

Coordinadores

Thomas CRAMER – Universidad Nacional de Colombia, Bogotá D.C.

Harald G. DILL – *University Mainz, Alemania*

Federica ZACCARINI –, *University of Leoben, Austria*

*Short course*

Spanish is the official language of this course

#### **9. Introducción a la petrografía de mena y aplicaciones al estudio de depósitos minerales**

Por: Dra. Federica ZACCARINI – *University of Leoben, Austria*

Dr. Giorgio GARUTI – *University of Leoben, Austria*

Prof. Juan Carlos MOLANO MENDOZA

Universidad Nacional de Colombia, Bogotá, D. C.

4) 11th Biennial SGA meeting Antofagasta CHILE, 26-29 Sept. 2011

<http://www.sga2011.ucn.cl/>

5) International GNM-GABeC School on: Minerals and Biosphere September 27-30, 2011, Campiglia Marittima (LI), Italy

[http://www.socminpet.it/minbio2011/organizing\\_en.html](http://www.socminpet.it/minbio2011/organizing_en.html)

#### **Other projected activities**

(1) Further development of the ‘Virtual Ore Mineralogy’ website.

(2) A more proactive role in ensuring quality control of reported ore mineralogical data in the future.

(3) Greater emphasis on the preservation of valuable - and often irreplaceable - collections of polished ore mineral specimens, depositing them, ideally in museums and mineralogical institutions. IMA-COM needs to prepare a set of guidelines for wide distribution. Closer contact with the IMA Commission on Museums would appear to be essential.

Federica Zaccarini  
Secretary, IMA-COM



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**IMA-COM Officers 2010-2014**

Dr. Chris J. Stanley  
(Chairman)  
Natural History Museum,  
Cromwell Road  
London, SW7 5BD  
UNITED KINGDOM  
Phone: +44 (0)20 7942 5627  
Fax: +44 (0)20 7942 5537  
[http://www.mindat.org/user-8203.html#2\\_0\\_0\\_0](http://www.mindat.org/user-8203.html#2_0_0_0)  
Email: [c.stanley@nhm.ac.uk](mailto:c.stanley@nhm.ac.uk)

Prof. Andy M. McDonald (Vice-Chairman)  
Department of Earth Sciences  
Laurentian University  
Sudbury, Ontario  
CANADA, P3E 2C6  
Phone: (705) 675-1151 ext 2266  
[http://amcdonald.laurentian.ca/Laurentian/Home/Departments/Earth+Sciences/Faculty/McDonald?Laurentian\\_Lang=en-CA](http://amcdonald.laurentian.ca/Laurentian/Home/Departments/Earth+Sciences/Faculty/McDonald?Laurentian_Lang=en-CA)  
E-mail: [amcdonald@laurentian.ca](mailto:amcdonald@laurentian.ca)

Dr. Federica Zaccarini (Secretary)  
Department of Applied Geosciences  
and Geophysics University of Leoben  
Peter Tunner Str. 5  
A 8700 Leoben  
AUSTRIA  
Phone: +43 38424026218  
<http://institute.unileoben.ac.at/mineralogie/Zaccarini.htm>  
E-mail: [Federica.Zaccarini@unileoben.ac.at](mailto:Federica.Zaccarini@unileoben.ac.at)

## COMMISSION ON ORE MINERALOGY

### International Mineralogical Association

<http://www.gsf.fi/domestic/com/ima-com.htm>

#### List of National Representatives (updated December 2010)

Entries in **RED** are cases where the national mineralogical society has been contacted regarding a new appointment. The 'old' names are retained until such an appointment is formalised.

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#### Honorary Member



Dr. Louis Cabri  
Cabri Consulting Inc.,  
99 Fifth Avenue, Suite 122, Ottawa,  
**CANADA**  
E-mail: [lcabri@sympatico.ca](mailto:lcabri@sympatico.ca)  
<http://www.cnt-mc.com/people/lcabri-profile.html>



Dr. Milka de Brodtkorb  
Paso 258-GA  
1640 Martinez,  
**ARGENTINA**  
E-mail: [milkabro@gmail.com](mailto:milkabro@gmail.com)



Prof. Jeff Vaughan  
Western Australian School of Mines  
Bentley Campus  
Perth, W.A. 6000,  
**AUSTRALIA**  
E-mail: [Vaughanj@wasm.curtin.edu.au](mailto:Vaughanj@wasm.curtin.edu.au)  
[http://geology.curtin.edu.au/people/jeff\\_vaughan/vaughan\\_profile.cfm](http://geology.curtin.edu.au/people/jeff_vaughan/vaughan_profile.cfm)



Prof. Aberra Mogessie  
Karl Franzes University  
Institute of Mineralogy and Petrology  
Universitaetsplatz 2  
8010 Graz  
**AUSTRIA**  
E-mail: [aberra.mogessie@uni-graz.at](mailto:aberra.mogessie@uni-graz.at)  
<http://www.uni-graz.at/aberra.mogessie/>



Prof. Eric Pirard  
Universite de Liege, MICA  
Caracterisation des Matières Minérales Naturelles  
Avenue des Tilleuls, 45



4000 Liege, **BELGIUM**  
E-mail: [Eric.Pirard@ulg.ac.be](mailto:Eric.Pirard@ulg.ac.be)  
[http://www.argenco.ulg.ac.be/CV/Pirard\\_UK\\_06.pdf](http://www.argenco.ulg.ac.be/CV/Pirard_UK_06.pdf)



Dr. Nelson Angeli  
Instituto de Geociências e Ciências Exatas  
Departamento de Petrologia e Metalogenia  
Av 24 A, 1515 13506-900 - Rio Claro – SP,  
**BRASIL**  
E-mail: [nangeli@rc.unesp.br](mailto:nangeli@rc.unesp.br)  
<http://buscatextual.cnpq.br/buscatextual/visualizacv.jsp?id=K4783551Y1>



Assoc. Professor Dr. Kamen Bogdanov  
Sofia University "St. Kliment Ohridski"  
Faculty of Geology and Geography  
Department of Mineralogy, Petrology and  
Economic Geology  
15 Tsar Osvoboditel Bd.  
1504 Sofia,  
**BULGARIA**  
E-mail: [kamen@gea.uni-sofia.bg](mailto:kamen@gea.uni-sofia.bg)  
<http://www.linkedin.com/pub/dir/Kamen/Bogdanov>



Dr. Steve Kissin  
Lakehead University  
Thunder Bay  
Ontario, P7B 5E1  
**CANADA**  
E-mail: [sakissin@gale.lakeheadu.ca](mailto:sakissin@gale.lakeheadu.ca)



Prof. Dr. Liu Jianming  
Secretary, Research Centre of Mineral Resource  
Exploration, C.A.S.  
P.O. Box 9701, 100101 Beijing,  
**CHINA**  
E-mail: [jmliu@mail.c-geos.ac.cn](mailto:jmliu@mail.c-geos.ac.cn)



(no representative currently appointed)  
**CROATIA**



Dr. František LAUFEK  
Czech Geological Survey, Geologická 6,  
152 00 Praha 5  
**CZECH REPUBLIC**  
E-mail: [frantisek.laufek@geology.cz](mailto:frantisek.laufek@geology.cz)  
<http://www.geology.cz/portal/page/portal/shared/f/frantisek.laufek>



Prof. Emil Makovicky  
Institute of Geology  
University of Copenhagen

Øster Voldgade 10  
DK-1350 Copenhagen,  
**DENMARK**  
E-mail: [EMILM@geol.ku.dk](mailto:EMILM@geol.ku.dk)  
[http://www.geol.ku.dk/person\\_main.asp?person=5416](http://www.geol.ku.dk/person_main.asp?person=5416)



Prof. Hassan M. Helmy  
Geology Department, Faculty of Science,  
Minia University, Minia,  
**EGYPT**  
E-mail: [hmelmy@yahoo.com](mailto:hmelmy@yahoo.com)



Dr. Kari Kojonen  
Geological Survey of Finland  
P.O. Box 96, Espoo FIN-02150,  
**FINLAND**  
[kari.kojonen@gsf.fi](mailto:kari.kojonen@gsf.fi)



Dr. Daniel Ohnenstetter  
CNRS-CRPG,  
15, rue Notre Dame des Pauvres, B.P. 20,  
54501 Vandoeuvre-les-Nancy, cedex,  
**FRANCE**  
E-mail: [dohnen@crpg.cnrs-nancy.fr](mailto:dohnen@crpg.cnrs-nancy.fr)  
<http://www.crpg.cnrs-nancy.fr/Equipes/FR/dohnen.html>



Dr. H-J. Bernhardt  
Ruhr Univ.-Bochum  
D-44780 Bochum,  
**GERMANY**  
Germany  
E-mail: [Heinz-Juergen.Bernhardt@rz.ruhr-uni-bochum.de](mailto:Heinz-Juergen.Bernhardt@rz.ruhr-uni-bochum.de)  
<http://www.uv.ruhr-uni-bochum.de/pvz-planung/i3v/00000700/00620622.htm>



(no representative currently appointed)  
**GREECE**



Prof. Ferenc Molnar  
Department of Mineralogy  
Eötvös Loránd University,  
Pázmány Péter s. 1/C  
1117 Budapest  
**HUNGARY**  
E-mail: [molnar@abyss.elte.hu](mailto:molnar@abyss.elte.hu)  
[molnarf@externet.hu](mailto:molnarf@externet.hu)



Biswajit Mishra,  
Department of Geology and Geophysics  
Indian Institute of Technology  
Kharagpur 721 302

**INDIA**

E-mail: [bmgg@gg.iitkgp.ernet.in](mailto:bmgg@gg.iitkgp.ernet.in)  
<http://www.iitkgp.ac.in/fac-profiles/showprofile.php?empcode=ZZmVR>



Prof. Pierfranco Lattanzi  
Department of Earth Sciences  
University of Cagliari  
Via Trentino 51  
09127 Cagliari

**ITALY**

E-mail: [lattanzp@unica.it](mailto:lattanzp@unica.it)  
[http://www.unica.it/scienze naturali/index.php?option=com\\_content&task=view&id=692&Itemid=160](http://www.unica.it/scienze naturali/index.php?option=com_content&task=view&id=692&Itemid=160)



Prof. Masaaki Shimizu  
Department of Earth Science  
Faculty of Science  
Toyama University  
3190 Gofuku Toyama 930-8555

**JAPAN**

E-mail: [mshimizu@sci.u-toyama.ac.jp](mailto:mshimizu@sci.u-toyama.ac.jp)



Dr. J.H.L. Voncken  
Delft University of Technology  
Faculty of Civil Engineering and Geosciences  
Department of Geotechnology Applied Geology  
Stevinweg 1  
2628 CN Delft

**NETHERLANDS**

E-mail: [J.H.L.Voncken@tudelft.nl](mailto:J.H.L.Voncken@tudelft.nl)  
<http://www.citg.tudelft.nl/live/pagina.jsp?id=aff01c44-8c2b-4344-94dd-fae7172d293b&lang=en>



Dr. Jeff Mauk  
Geology Department  
University of Auckland  
Private Bag 92019  
Auckland,

**NEW ZEALAND**

E-mail: [j.mauk@auckland.ac.nz](mailto:j.mauk@auckland.ac.nz)  
[http://www.geog.auckland.ac.nz/about\\_us/our\\_people/mauk\\_jeff/index.shtm](http://www.geog.auckland.ac.nz/about_us/our_people/mauk_jeff/index.shtm)



Prof. Adam Piestrzyński  
Economic Geology Dept., Faculty of Geology,  
Geophysics and Environmental Protection  
AGH-University of Science and Technology  
av. Mickiewicza 30  
30-059 Kraków,

**POLAND**

E-mail: [piestrz@geol.agh.edu.pl](mailto:piestrz@geol.agh.edu.pl)



Dr. Orlando da Cruz Gaspar  
Rua Marechal Saldanha, 935, 2? D.  
4150-659 Porto,

**PORTUGAL**

E-mail: [orlando.gaspar@netcabo.pt](mailto:orlando.gaspar@netcabo.pt),



Dr. Sorin-Silviu Udubasa  
University of Bucharest  
Faculty of Geology and Geophysics  
Dept. Mineralogy  
Bd. Balcescu 1, Bucharest,

**ROMANIA**

E-mail: [udubasa@geo.edu.ro](mailto:udubasa@geo.edu.ro)



Dr. Olga Plotinskaya (PhD)  
senior research fellow,  
Institute of Ore Geology, Petrography,  
Mineralogy, and Geochemistry Russian  
Academy of Sciences (IGEM RAS)  
35 Staromonetny pereulok, Moscow, 119017  
[plotin@igem.ru](mailto:plotin@igem.ru), [plotin-olga@yandex.ru](mailto:plotin-olga@yandex.ru)



Prof. Martin Chovan  
Department of Mineralogy and Petrology  
Faculty of Natural Sciences, Comenius University  
Mlynska dolina  
84215 Bratislava,

**SLOVAK REPUBLIC**

E-mail: [chovan@fns.uniba.sk](mailto:chovan@fns.uniba.sk)



Prof. Roland Merkle  
Department of Geology  
University of Pretoria  
0002 Pretoria

**SOUTH AFRICA**

E-mail: [roland.merkle@up.ac.za](mailto:roland.merkle@up.ac.za)  
<http://web.up.ac.za/default.asp?ipkCategoryID=4926>

**SOUTH KOREA**

Dr. Sang-Mo Koh (Ph.D.)  
Director, Overseas Mineral Resources Department,  
Mineral Resource Research Division,  
Korea Institute of Geoscience and Mineral  
Resources (KIGAM)  
92 Gwahang-no, Yuseung-gu, Daejeon,  
**KOREA 305-350**  
E-mail: [kohsm@kigam.re.kr](mailto:kohsm@kigam.re.kr)



Prof. F. Gervilla  
Dpt. Crist. y Mineralogía  
Facultad de Ciencias Universidad Granada

**SPAIN**

E-mail: [gervilla@ugr.es](mailto:gervilla@ugr.es)  
<http://www.ugr.es/~gimpy/>



Dr. O. Amcoff  
Department of Earth Sciences  
University of Uppsala  
Villavägen 16  
SE-752 36 Uppsala,

**SWEDEN**

E-mail: [orjan.amcoff@geo.uu.se](mailto:orjan.amcoff@geo.uu.se)  
<http://www.geo.uu.se/mpt/default.aspx?pageid=1519&lan=0>



Dr. Lluís Fontbote  
Dept. Mineralogie  
13, rue des Maraichers  
CH-1211 Geneve 4,  
**SWITZERLAND**  
E-mail: [Lluís.Fontbote@terre.unige.ch](mailto:Lluís.Fontbote@terre.unige.ch)  
[http://www.unige.ch/sciences/terre/mineral/admin/min\\_peop01b.html](http://www.unige.ch/sciences/terre/mineral/admin/min_peop01b.html)



Dr. Alexander V. Emetz  
M.P. Semenenko Institute of Geochemistry,  
Mineralogy and Ore Formation of NAS of  
Ukraine, Palladin Av., 34  
Kyiv-142  
**UKRAINE**  
E-mail: [emetz\\_a@igmr.relc.com](mailto:emetz_a@igmr.relc.com)



Prof. D.J. Vaughan  
Geology Department, Univ. of Manchester  
Oxford Road, Manchester M13 9PL,  
**UNITED KINGDOM**  
E-mail: [david.vaughan@manchester.ac.uk](mailto:david.vaughan@manchester.ac.uk)  
<http://www.seaes.manchester.ac.uk/aboutus/staff/staffprofile.php?id=60>



Prof. Mark Barton  
Center for Mineral Resources  
University of Arizona  
Gould Simpson Building  
1040 E 4th St Tucson, AZ 85721  
**UNITED STATES OF AMERICA**  
E-mail: [barton@geo.arizona.edu](mailto:barton@geo.arizona.edu)

<http://www.geo.arizona.edu/cmr/people/markB.html>



Prof. Rustam Koneev  
National University of Uzbekistan, Faculty of  
Geology,  
700174 Tashkent,  
**UZBEKISTAN**  
E-mail: [rkoneev@yahoo.com](mailto:rkoneev@yahoo.com)

**Countries not affiliated to IMA**

Assoc. Prof. Diego Morata  
Plaza Ercilla #803  
Casilla 13518 - Correo 21 Santiago  
**CHILE**  
E-mail: [dmorata@cec.uchile.cl](mailto:dmorata@cec.uchile.cl)  
[http://www.geologia.uchile.cl/quieeenes\\_somos/acadeemicos/dmorata/](http://www.geologia.uchile.cl/quieeenes_somos/acadeemicos/dmorata/)



Assoc. Prof. Carlos Molano Mendoza  
Facultad de Ciencias  
Universidad Nacional de Colombia  
**COLOMBIA**  
E-mail: [jcmolanom@unal.edu.co](mailto:jcmolanom@unal.edu.co)



Dr. Antoni Camprubí i Cano  
Departamento de Geoquímica  
Instituto de Geología  
Universidad Nacional Autónoma de México  
Ciudad Universitaria. 04510 México, D.F.  
**MEXICO**  
E-mail: [camprubitaga@gmail.com](mailto:camprubitaga@gmail.com)  
[http://www.geologia.unam.mx/igl/index.php?option=com\\_content&view=category&id=92&Itemid=98](http://www.geologia.unam.mx/igl/index.php?option=com_content&view=category&id=92&Itemid=98)



Prof. Ibrahim Uysal  
Department of Geology,  
Karadeniz Technical University,  
Trabzon,  
**TURKEY**  
E-mail: [iuysal@ktu.edu.tr](mailto:iuysal@ktu.edu.tr)  
<http://enformatik.ktu.edu.tr/ksvds/akademisyeneng.php?p=3170>