

COMMISSION ON ORE MINERALOGY

International Mineralogical Association

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

Annual Report, 10th November 2008

This report covers aspects of IMA-COM activities since the date of the last annual report (November 2007).

COM Officials 2006-2010

The following nominations of officials to serve COM in the period 2006-2010 were accepted at the IMA-COM Business meeting held during the IMA meeting in Kobe, Japan, July 2006:

Chairman: Nigel J. Cook nigelc@nhm.uio.no

Vice-Chairman: Kari K. Kojonen kari.kojonen@gsf.fi

Federica Zaccarini was appointed as COM Secretary during 2007;

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. Limited financing for meeting participation has been possible via association with other groups, e.g., Applied Mineralogy Group of the Mineralogical Society (U.K.).

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, with which it co-sponsored a session at the 32nd International Geological Congress (IGC). IMA-COM worked with the organizing committee of the 33rd IGC (2008) in the preparation of three scientific sessions at the conference.

COM activities in 2008

The last business meeting took place during the 33rd IGC in Oslo. Minutes will be available on the commission webpage shortly: <http://www.gsf.fi/domestic/com/ima-com>.

During this meeting the decision to update the list of national representative was taken (see the appendix at the end of this report) and also to nominate Dr. Louis Cabri as an Honorary Member of the COM.

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

1. 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

The following detailed and useful report on the session Platinum group mineralogy was compiled by Andy McDonald:

As part of 33rd International Geological Congress meeting held in Oslo, Norway (Aug. 6-14, 2008), the IMA-COM made its presence felt through a special session devoted to Platinum-Group Mineralogy (MPM-04), convened by Andy M. McDonald (Laurentian Univ.) and Kari Kojonen (Geological Survey of Finland). The session presented a unique opportunity to bring together international researchers involved in PGM research from a variety of vantage points, including crystallography, synthesis, geological setting, genesis, mineral beneficiation and isotopic analyses. In doing so, this special session created a unique forum in which to discuss this fascinating group of minerals from a variety of perspectives; as researchers, we tend to develop focused strengths in our own unique niches and being able to step beyond the confines of these 'boxes' opens up the doors to furthering the larger science behind PGM, the ultimate goal of the session. The session was financially supported by the Applied Mineralogy section of MinSoc and logistically, IMA-COM, via the Chair, Dr. Nigel Cook. It spanned one entire day of the IGC and included 14 oral presentations and three posters. Two key-note speakers were invited. The first was Dr. Louis Cabri (Cabri Consulting, Inc.), who spoke on the challenges relating to the study of PGM distribution in ores, along with the respective analyses of PGE in these ores, highlighting some of the issues that are still outstanding (e.g., crystallography, extent of solid solution in specific series) when it comes to generating a complete understanding the genesis and distribution of PGM. The second was Dr. Malitch Kreshimir (All-Russia Geological Research Institute) who spoke on the application of Re-Os systematics to dating the origin of PGM, notably IPGM from mafic to ultramafic settings. By employing concrete examples, Dr. Kreshimir demonstrated how such an approach can provide fundamental data relating to the paragenesis of these minerals and at the same time, formulate new tools useful in the exploration of such ore deposits. A large number of presentations focused on PGM from ophiolites and layered intrusions in the Dominican Republic (Zaccarini *et al.*), Brazil (Garuti *et al.*), Turkey (Uysal *et al.*), Bulgaria (Gervilla *et al.*) and New Caledonia (González-Jiménez *et al.*), reinforcing the concept that despite the highly geological and temporal settings for these lithologies, there are significant similarities in the PGM contained within them. Presentations were also made on PGM from mafic intrusions including those found in the Monchegorsk complex (Grokhovskaya) and the Fedorovo-Pansky intrusion (Subbotin *et al.*), Russia, along with those found in placer deposits from Northern Lapland (Konjonen *et al.*, Tornroos *et al.*). Finally, presentations were made on crystal chemistry of PGM from 'hydrothermally' remobilized components of ores in Sudbury (McDonald *et al.*) and for the synthesis of PGM using the silica-tube methods under moderate temperatures (Vymazalová *et al.*). Truly, an incredible range of

presentations that covered a number of the diverse aspects relating to PGM. It is also notable that at the conclusion of the formal presentations, stimulating discussions involving the audience and presenters were held. These clearly highlighted the breadth of experience and knowledge available and the keen interest that so many researchers have for PGM. An extremely fitting conclusion to such a stimulating special session! In conclusion, the key objectives of the special session on Platinum-Group mineralogy, to bring together those researchers with a keen interest in these minerals and to facilitate stimulating discussions on the many facets associated with them, were met. It is hoped that this session will be the catalyst for future meetings. To this end, it was noted that there are planned sessions that will build upon the focus and success of this meeting, including that dedicated to Platinum-Group Mineralogy and Automated Mineral Processing (Andy McDonald, International Platinum Symposium, June, 2010) and one dedicated to the analyses of PGM (An IMA-COM-sponsored short course in Leoben, Austria, organized by Aberra Mogessie, Federica Zaccarini and Oskar Thalhammer in September 2010). On behalf of the conveners, Drs. Andy M. McDonald and Kari Kojonen, we thank all who contributed to the incredible success of the special session on Platinum-Group Mineralogy and look forward to building upon its success.

IMA-COM has proposed the following session for the next **2010 IMA General Meeting** in Budapest. 'Automated Technologies in Ore Mineralogy' (Convenors: Roland Merkle, Alan Butcher and Hanna Horsch). These additional sessions have been also proposed 1) PGM (tied in to the Leoben workshop described below), 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.

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.

Report of COM sub-commission on sulphosalts

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

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).

Summary of main activities in the period 2003-2008

Business meetings

COM holds a Business Meeting every two years, coinciding with the International Geological congress (Florence 2004, Oslo 2008) and the General Meeting of the International Mineralogical Association (Kobe, 2006).

COM website

COM created an independent website hosted at the Geological Survey of Finland.

Scientific sessions at international meetings and short courses

(A) *VGP 30, EGS-AGU-EUG Joint Assembly, in Nice, France, 7th-11th April 2003.*

Scientific session 'Gold and Platinum Group Minerals: from experimental mineralogy and microanalysis to deposit Modelling'.

(B) *Scientific sessions at the 32nd International Geological Congress, Florence, August 2004*

COM organised three scientific sessions for the 32nd IGC, Florence, Italy, 20-28 August 2004.

'Gold deposits in diverse geological environments' (co-proposed by COM and IAGOD). This symposium session received 108 contributions and was held as an all-day session on Saturday 21st August.

'Telluride and selenide minerals related to gold and platinum group element deposits', co-sponsored by IGCP project 486. The session received 52 contributions and was held as an all-day session on Sunday 22nd August.

'Mineral Deposits' session on 'Conventional and unconventional platinum group mineral deposits'. The session was held on Friday 27th August.

(C) *Joint meeting of IMA-COM and the Applied Mineralogy Group of the Mineralogical Society (U.K.), 7th January 2005*

A session "Platinum metals in the urban environment - should we worry?" formed part of the larger meeting of the Mineralogical Society of Great Britain and Ireland (6-7th January 2005, Bath, U.K.) with the title "Environmental Mineralogy, Geochemistry and Human Health". COM Chairman Roland K.W. Merkle gave a keynote lecture 'Large scale PGE anomalies in South Africa and possible mechanisms for the release of PGE to the environment'.

(D) *Short Course during the 10th International Platinum Symposium, Oulu, Finland, August 2005*

A Short course 'Current methods in applied mineralogy of platinum-group element ores and products' was co-sponsored by COM and held during the International Platinum Symposium, Oulu, Finland (August 6th 2005), organized by Prof. Louis J. Cabri. Five invited speakers delivered the lectures.

(E) *Scientific session at 19th General Meeting of the International Mineralogical Association, Kobe, Japan, July 23-28th 2006*

Session 16: 'Mineralogy of Ore Deposits'.

(F) *Scientific session at 33th Geological congress, Oslo, Norway, August 23-28th 2008*

Sessions: MPM 04, Platinum Group Minerals (2 invited speakers, 12 talks and 4 posters), MRD 09 (8 talks and 5 posters) and MPM 03 Metals in the Earth: from vital resource to environmental hazards (jointly with CAM). Conveners: David Vaughan, Dogan Pactunc, Kari Kojonen.

(G) *Field workshop at Espoo (Finland), 26-31 August 2007*

'The Au–Ag telluride–selenide deposits' field workshop was organized in Espoo, Finland, from 26 to 31 of August 2007. A volume of extended abstracts (Geological Survey of Finland Guide number 53) Au–Ag telluride–selenide deposits (Eds: K.K. Kojonen, N.J. Cook and J. Ojala) was published by the Geological Survey of Finland.

Short courses

During the 1990's, IMA-COM held several short courses in advanced ore mineralogy. The last such course was held in Finland in 2000. The difficulty of ensuring appropriate funding for future short courses has led to several attempts in the past few years to be abandoned. Two COM short course venues were proposed in 2006 (Nanjing, Peoples Republic of China; Kharagpur, India) for 2008/2009, but there has, regrettably, been little progress during 2008 to develop business plans for the first of these.

Reports of COM sub-commissions

The sulphosalt sub-commission of COM presented their full-length report.

Involvement in IGCP project

A number of COM 'members' joined the vice-chairman and secretary in proposing the IGCP project "*Au-Ag-telluride-selenide deposits in Europe and in developing countries*" (IGCP 486; 2003-2008).

Other activities/initiatives

IMA-COM has attempted to take a more active role in ensuring quality control of reported ore mineralogical data. The IMA-COM President Roland Merkle (2002-2006) made a call for COM 'members' to become involved in international initiatives of the International Standards Organisation (ISO) aimed at establishing guidelines for standardisation of microbeam data acquisition routines.

IMA-COM has called for valuable – and often irreplaceable collections of polished ore mineral specimens to be deposited in museums and mineralogical institutions to be preserved, and catalogued for future researchers. Discussion among various institutions has been initiated on the optimal way to ensure a systematic and common approach.

The initiative of the COM to organize a standard set of ore minerals abbreviation was briefly discussed. The chairman explained that this is a difficult target and suggested to use the abbreviations recommended by the Canadian Mineralogist.

COM has also continued to promote 'Virtual Ore Mineralogy', in which a series of descriptions of ore minerals with optical images will be available free of charge on the IMA-COM website.

Workplan for 2009, with perspectives for 2010-2012

In the next term (2009-2012), COM will continue to organize scientific sessions within large international scientific meetings, such as the IGC, Goldschmidt meeting and IMA General Meetings. COM will redouble its efforts to organise short courses where they have not been held previously (particularly in developing countries).

COM Short courses

During the business meeting of Oslo, was discussed the possibility to organize the following short courses:

- 1) Nigel Cook reported on plans to hold a COM short course in India in November 2009. A tentative schedule has been agreed and list of proposed guest lecturers and budget is now in preparation
- 2) COM short course in Leoben (Austria) dealing with mineralogy, geochemistry and ore deposits of Platinum group elements (possible date: from 28th August to 1st September 2010 - after the IMA

General Meeting of Budapest) organized by Aberra Mogessie, Oskar Thalhammer and Federica Zaccarini. The preliminary program will be available soon.

Other projected activities

- (1) Reporting by the COM sub-commission on 'selenide and telluride mineralogy' within the period 2006-2010, with final reporting at the 20th IMA General meeting in Budapest, 2010.
- (2) Further development of the 'Virtual Ore Mineralogy' website.
- (3) A more proactive role in ensuring quality control of reported ore mineralogical data in the future.
- (4) 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.
- (5) Following the suggestion of Dr. Louis Cabri, the IMA-COM should promote itself by writing a short article in the journal 'Elements' showcasing its activities.

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Secretary, IMA-COM

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Appendix: List of National Representatives

COMMISSION ON ORE MINERALOGY

International Mineralogical Association

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

List of National Representatives (updated September 2008)

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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