

TALKS

Monday 21 June 2010

Session I PGE Deposits (Convenors: David Peck and Gordon Chunnett)

Session Ia

- A.J. Naldrett (KEYNOTE) Concentration of PGE and chromite in the Bushveld Complex
- J. Kinnaird Along-strike and down-dip variations in multiphase sills of the Platreef, Bushveld Complex
- W.D. Maier Formation of Bushveld PGE reefs due to magma chamber subsidence and mobility of cumulate slurries
- A.H. Green (INVITED) Braving the PGE Industry

Session Ib Chair: Wolfgang Maier

- J.G. Foster (INVITED) Location and distribution of the PGE in magmatic sulfides: Implications for genesis and mineral processing
- D. Hutchinson Why is the Merensky Reef so enriched in precious metals compared to the Platreef? Magmatic processing efficiency, plain and simple
- F.J. Stevens Stratigraphic correlations of the Sheba's Ridge area, southeastern Bushveld Complex, South Africa
- I. McDonald The nature of PGE mineralization in the Aurora Project area, northern Bushveld Complex, South Africa
- W. Kanitpanyacharoen Sulfide-associated assemblages in the Bushveld Complex, South Africa: evidence for ore element transport beneath the Merensky Reef by chloride-carbonate fluids
- R.R. Keays (INVITED) Sulphide saturation history of the Stillwater Complex, Montana: chemostratigraphic variation in Platinum Group Elements

Session Ic Chair: Alan Boudreau

- A. Wilson (INVITED) New Insight into the stratigraphy, emplacement, and evolution of the Basal Ultramafic Succession in the Eastern Bushveld Complex, South Africa
- A.J. DuToit Great Dyke Platinum in the Region of Ngezi Mine, Zimbabwe: Characteristics of the Main Sulphide Zone and variations that affect mining
- A.U. Korchagin Geology and ore composition of the Kievev PGE-bearing deposit of West-Pana Layered Intrusion
- F. Melcher Platinum-group element potential of chromite ores from southern Iran
- J.M. González-Jiménez Contemporaneous segregation of PGE- and BM-rich sulfide melts and chromite crystallization: the Caridad chromite deposit, Mayarí-Baracoa Ophiolitic Belt (eastern Cuba)
- D.C. Peck Variability in platinum:palladium ratios in magmatic ore systems
- D.J. Good Applying multistage dissolution upgrading and 3D-GIS to exploration at the Marathon Cu-PGE Deposit, Canada

Session Id Chair: James Scoates

- D.M. Peterson (INVITED) PGE-associated polymetallic deposits in the Mid-Continent Rift: An overview

C.J. Wall	Refining the precise age and duration of magmatism related to the Stillwater Complex
V.R. Goodgame	The Thunder Bay North Deposit: Chonolith-hosted Pt-Pd-Cu-Ni mineralization related to the Midcontinent Rift
S.-J. Barnes	Composition of the Lac des Iles magma and implications for the origin of the ore
M.L.N. Djon	Contrasting Pd-bearing phases from the mineralized zones of the Lac des Iles Complex, Ontario, Canada
R.E. Ernst (INVITED)	Using large igneous provinces for mineral exploration

Tuesday 22 June 2010

Session II Ni-Cu-(PGE) Deposits (Convenors: Michael Lesher & Peter Lightfoot)

Session IIa Chair: Steve Barnes

E.M. Ripley (KEYNOTE)	Recent advances and future directions in the study of magmatic Cu-Ni-(PGE) deposits
X. Ding	PGE systematics of the conduit-related Eagle Cu-Ni-(PGE) deposit, Upper Michigan
J.E. Mungall	The Eagle's Nest komatiite-hosted Ni-Cu-PGE sulphide deposit in the James Bay Lowlands, Ontario
M. Zhang	Volatile composition and carbon isotope constraints on ore genesis of the Jinchuan Cu-Ni Deposit, western China
P.C. Lightfoot	S-saturation history of Nain Plutonic Suite mafic intrusions: Origin of the Voisey's Bay deposit, Labrador, Canada
R. Piña	Platinum-group element concentrations in pyrrhotite, pentlandite, chalcopyrite, and pyrite from the Aguablanca Ni-Cu ore deposit (SW Spain)

Session IIb Chair: Jim Mungall

C.F. Ferriera-Filho (INVITED)	Geological and Petrological Constraints on the Origin of Brazilian Ni-Cu Sulfide and PGE Deposits
S.M. Jowitt	New Insights into the Geology and Mineral Potential of the West Raglan Ni-Cu-PGE project, Cape Smith Fold Belt, Quebec
G.J. Heggie	The scale of mineralised Archaean komatiite systems: Vectoring in on the Long-Victor deposit, Western Australia
M.G. Houlé	Localization of komatiite-associated Ni-Cu-(PGE) deposits in the Shaw Dome, Abitibi greenstone belt, Superior Province
S.J. Barnes	Platinum-group elements and gold in highly deformed and metamorphosed komatiite-hosted nickel deposits of the Lake Johnston Greenstone Belt, Yilgarn Craton
S.-H. Yang	The role of selective crustal contamination in the genesis of magmatic sulfide deposits: a case study of the Jingbulake sulfide-bearing intrusion, NW China

Session IIc Chair: Chris Davis

D.E. Ames (INVITED)	Minor element composition of Sudbury ores: Implications for source contributions, genesis and exploration of Ni-Cu-PGE in diverse settings
R.C. Stewart	Halogen geochemistry of footwall breccia and associated units of the main mass of the Sudbury Igneous Complex, Ontario

- A.M. Gibson Contrasting styles of low sulphide high precious metal mineralisation in the 148 and 109 FW zones: North and South Ranges of the Sudbury Igneous Complex, Ontario, Canada
- A. Pentek The significance of partial melting in hydrothermal “low-sulfide” mineralization within the contact aureole of the Sudbury Igneous Complex, Ontario, Canada
- L. Hecht Genesis of PGE-rich sulfide mineralization in Offset dikes of the Sudbury Impact Structure
- M.C. Stewart Diversity in Platinum Group Element (PGE) Mineralization at Sudbury: New Discoveries and Process Controls
- G. Tuba Distinguishing hydrothermal assemblages associated with and post-dating ‘low-sulfide’ Cu-Ni-PGE mineralization in the footwall of the Sudbury Igneous Complex: a possible tool in mineral exploration

Session IId Chair: Reid Keays

- C. Li The Early-Permian Kalatongke Cu-Ni Deposit in the Paleozoic Chinese Altay Orogenic Belt: Ore Genesis and Tectonic Setting
- N.A. Krivolutskaya Maslovskoe deposit as a new important PGE-Cu-Ni source in the Noril’sk region (Siberia, Russia)
- V. Kalugin Two-stage formation of the Oktyabrsky sulfide orebody, Noril’sk: evidence from vertical chemical zonation
- Y.V. Nazimova Geology and PGE mineralisation of the Main Ridge intrusions in Monchegorsk district, Baltic Shield
- A.V. Lygin A new style of Ni-mineralization resulting from the interaction of ultramafic rocks with hydrothermal fluids derived from granites: Avebury Ni-deposit, Western Tasmania
- X.-R. Luo Geoelectrochemical Anomaly, Mechanism and Exploration of Copper and Nickel Deposit, Hongqiling, Jilin, China

Wednesday 23 June 2010

Session III Geochemistry of Chalcophile and Siderophile Elements (Convenors: Sarah-Jane Barnes & James Brennan)

Session IIIa

- J.-P. Lorand (KEYNOTE) Geochemistry of platinum-group elements in the mantle: What do peridotites tell us?
- H. Becker Melting and refertilization of peridotites: what are the implications for the HSE budget of the Earth’s mantle?
- N.R. Bennett Metal-silicate partitioning of rhenium: Implications for terrestrial accretion
- V.S. Kamenetsky Primary melts of Emeishan and Karoo flood basalts: Linking Ni potential of the magmas and their mantle sources
- Y. Yang Siderophile elemental constraints on sulfide-saturated fractionation of the Cenozoic basalts and andesites in the South China Sea region
- J.-F. Gao PGE and Re-Os isotope geochemistry of the Kalatongke Cu-Ni sulfide deposit, NW China

Session IIIb Chair: Hazel Prichard

- P.J. Jugo (INVITED) Exponential increase of sulfur content at sulfide saturation with increasing oxygen fugacity: implications for Cu-Ni-PGE mineralization

- A.W. McNeill The Siqueiros Transform Fault MORB; A tale of sulfur-saturation
- A.A. Ariskin Modeling sulphide solubility in MORB glasses and OI cumulate piles: the opposite effect of NiO vs FeO in the melt
- A.G. Tomkins Formation of Magmatic Sulfide Deposits in Arcs by Reduction of Oxidized Basalt
- J.L. Wykes The effect of FeO on the sulfur content at sulfide saturation (SCSS): A comparison between sulfur and selenium
- I.V. Chaplygin Behaviour of Chalcophile and Highly Siderophile Elements (Au, PGE, Re) in volcanic gases of Kudriavy volcano (Kuriles)

Session IIIc Chair: Harry Becker

- B. Godel (INVITED) High-resolution X-ray computed tomography: a new technique to illuminate platinum ores
- C. Patten Platinum-group elements and chalcophile elements content in sulphide droplets from MORB glass
- S.A.S. Dare Platinum-group element (PGE)-bearing pyrites in pyrrhotite-rich sulfides from McCreedy and Creighton Ni-Cu-PGE sulfide deposits, Sudbury, Canada
- H.M. Prichard Redistribution in the surface environment of Pt, Pd and Rh from road dust
- X.-Y. Song Nature of mantle sources of magmatic sulfides mineralized intrusions in Palaeozoic convergent zones, Xinjiang, NW China
- R.E. Botcharnikov The effects of fO₂, Cl, and S on the geochemical behavior of Au in andesitic and rhyodacitic magmas
- F.A. Blaine The role of Cl on the formation Pt micronuggets in experiments with hydrous haplobasalt: applications to ore-forming processes

Session III d Chair: Jacob Hanley

- M.L. Fiorentini Platinum-group element geochemistry of mineralized and non-mineralized komatiites and basalts
- J.A. Coggon Dating platinum mineralisation using the ¹⁹⁰Pt-¹⁸⁶O system: examples from the Bushveld Complex, RSA and the Meratus ophiolite, Borneo
- J. Park The role of chromite crystallization on the PGE geochemistry of mafic magmas
- C. Brough Trace element geochemistry of chromite as a pathfinder for anomalous PGE concentrations in the Al'Ays ophiolite
- L.M. Zhitova Heterogeneity of chromium spinels of the Merensky Reef as the evidence of their origin, Bushveld Complex, South Africa
- S.A. Linkermann Chrome and PGE behaviour from the Kemi Intrusion, Finland: geochemical and Sm-Nd isotopic implications

Thursday 24 June 2010

Session IV PGE Mineralogy and Beneficiation (Convenors: Michelle Huminicki & Paul Sylvester)

Session IVa

- L.J. Cabri (KEYNOTE) Process mineralogy in the Pt industry and future trends

C.C. Hamilton (INVITED)	Process Mineralogy in the Pt Industry: An Evolution in Data Presentation, Interpretation and Added-Value, from the 1980's to Present Day
T.L. Evstigneeva	The "Non-Stoichiometry" of Platinum Group Minerals
M. Escayola	Geochemistry and mineralogy of PPGE rich Middle Arm Brook chromitites (Newfoundland, Canada)
I. Uysal	Cr-PGE mineralization in the Turkish ophiolites: The state of the art
T.L. Grokhovskaya	PGE distribution and PGM assemblages in low-sulfide PGE deposits of the Paleoproterozoic Monchegorsk Complex, Kola Peninsula, Russia
Session IVb	
F.D. Ford (INVITED)	Process mineralogy of Sudbury platinum group minerals as determined by mineral liberation analyzer
I.M. Kjarsgaard	Ore mineralogy of Cu-Ni-PGE deposits in the North Range footwall environment, Sudbury, Canada.
M.A. Kelvin	Characterization of PGE occurrences in the Ovoid of the Voisey's Bay Ni-Cu-Co Deposit, Labrador, with applications to mineral processing
M. Yudovskaya	Facies variability of PGE mineralization in Platreef chromitites
J.C.Ø. Andersen	Platinum-group minerals in the Craignure Cu-Ni-sulfide deposit, Scotland
D.A. Holwell	Marginal Cu-Au-PGE mineralization in the newly discovered Togeda Macrodyke, Kangerlussuaq region, east Greenland

POSTER PRESENTATIONS

PGE Deposits

B. A. Azar	Geochemistry of the Blackbird Chromite Deposit, McFauld's Lake, Ontario
R. E. Jones	Micro-analysis of early magmatic Fe(Ni,Cu) sulphide inclusions in the Platreef, Northern Bushveld Complex, South Africa
T. Karinen	The Rometölväs Reef of the Koillismaa Intrusion
C. M. Muñoz	Distribution of Platinum Group Elements in the Hinterland's Ebay claim, central part of the Bell River Complex, Matagami, Quebec, Canada.
M. M. Price	Platinum group element mineralization in the River Valley Intrusion, Ontario, Canada: Characterization and Effects of Water-Rock Interaction
R. G. Ruthart	Characterization of High-PGE Low-Sulphur Mineralization at the Marathon PGE-Cu Deposit, Ontario

Ni-Cu-(PGE) Deposits

C. T. Barrie	Metal dispersion halo surrounding the Kabanga North Ni-Cu-Co deposit, Western Tanzania
L. M. Chen	Abundances and distributions of platinum group elements of Segment I, the Jinchuan Ni-Cu-(PGE) deposit, NW China: Implication for its genesis
R. M. Easton	New geological developments related to the Paleoproterozoic East Bull Lake intrusive suite, Superior and Southern Provinces, Ontario, Canada
P. Hu	The Permian Huangshanxi Cu-Ni deposit in western China: Magma evolution and ore genesis
R. Latypov	Was the parental magma of the Sudbury Igneous Complex really superheated?

- A. Laverenchuk The Sudbury Igneous Complex, Canada: Numerical modeling confirms fractionation of a single parental magma
- M. Munteanu Distribution and significance of the PGE contents in the Lengshuiqing Ni-Cu deposit, Sichuan, SW China
- I. R. Prokopyev Mineralogical and geochemical characteristics of the Maksut copper-nickel deposit (Eastern Kazakhstan)
- T. M. Ramadan Cu-Ni-PGE Mineralization in the Arabian-Nubian Shield, South Eastern Desert, Egypt, Using Remote Sensing Approach
- J. S. Scoates Recent progress in determining the precise age of ultramafic sills and mafic dikes associated with mineralization in the Thompson Nickel Belt, Manitoba, Canada
- K. Shindo Ni-Cu mineralization with the Oshirabetsu gabbroic complex in the Hidaka metamorphic belt, Hokkaido, Japan
- S. F. Sluzhenikin Gold and silver in ores of the Norilsk region
- A. E. Stout Genesis of the McCreedy East Ni-Cu-PGE contact-footwall ore system, Sudbury, Ontario
- S. Su The origin and evolution of the Wengeqi mafic-ultramafic complex and PGE mineralization, Guyang County, Inner Mongolia, China
- C. J. White Low-sulphide PGE-Cu-Ni mineralization of the Sudbury Igneous Complex, Canada
- N. Zeng Petrologic and geochemical studies of ultramafic and mafic intrusions in southern part of Jinchuan, Gansu, China

Geochemistry of Chalcophile and Siderophile Elements

- A. Beyanu Behaviour of Au-PGE in amphibolites and their weathered equivalents in the NW border of the Congo Craton (South-Cameroon)
- L. A. Bardeggia Laser ablation ICP-MS element distribution maps as a tool to unravel the spatial distribution and chemical association of highly siderophile elements in sulfide assemblages: Examples from the Merensky Reef and the J-M Reef
- J. M. Brenan An experimental study of spinel- and chromite-melt partitioning of platinum group elements
- T. Ciborowski Internal anatomy of the dissected ~2.5-2.45Ga Matachewan-East Bull Lake and Mistassini large igneous provinces: Geochemical and tectonic implications for petrogenesis and economic mineralisation
- D. M. Evans Large-scale platinum-palladium enrichment of the mantle-crust transitional zone in the Nkenja mafic-ultramafic body, Tanzania
- C. Galdames Platinum-group elements in ultramafic rocks from La Cabaña area, Coastal Cordillera of South-Central Chile
- S. Goderis Detection and identification of projectile traces in a terrestrial impact structure using platinum group element ratios
- R. S. Hiebert Multiple sulfur isotopes: a new tool for identification of sulfur source in magmatic sulfide deposits
- N. Leawood Determination of PGE in sulfide ore deposits by isotope dilution-inductively coupled plasma mass spectrometry using hydrogen in collision reaction interface
- P. Page Chromite does not control IPGE (Os, Ir, Ru)
- H. M. Prichard Redistribution in the surface environment of Pt, Pd and Rh from road dust

- E. V. Pushkarev Primary magmatic and secondary postmagmatic compositional trends of chromian spinel from dunite of Uralian-Alaskan type complexes
- M. Queffurus The use of S/Se ratios in magmatic Ni-Cu-PGE sulfide deposits
- E. V. Sharkov PGE-Cu-Ni ore deposits in large igneous provinces: Why are they so rare? Evidence for Northern Eurasia
- S.-Y. Yu Effects of melt percolation on the Re-Os systematics of continental mantle lithosphere: A case study of spinel peridotite xenoliths from Yong'an, NE China

PGE Mineralogy and Beneficiation

- H. R. Barrueto Main features of the Pt-Pd chromitite-type ore deposit, Tróia Unit, Cruzeta Complex, NE Brazil: insights provided by microscopic and chemical approaches
- A. Culaj Mineralogy of the platinum group elements in the chrome mines in Albania
- M. L. Dora Ni-Cu-PGE mineralisation in the mafic-ultramafic rocks of western part of Bastar Craton, Central India and their petrogenesis
- B. I. Gongalskiy Platinum mineralization in the titanomagnetite and sulfide ores of the Chineyskiy Layered Massif, Northern Transbaikalia, Russia
- R. J. Kaukonen Mineralogical investigations of small scale beneficiation tests of some sulfide-poor PGE occurrences
- H. Kozlu Geochemistry of the platinum-group minerals (PGM) in the chromitites from Elbistan-Berit mantle/transition zone and Kızıldağ (Hatay) Ophiolite, SE-S Turkey
- H. Miettunen The method for PGM synthesis
- V. Mitkin Application of fluoroxidants for arbitration analyses of persistent PGE-bearing chromites, sulfides, carbonaceous rocks and tailing materials from exploration deposits (Review)
- T. Oberthuer Advances in the study of platinum mineralization by combining novel and classic mineralogical and geochemical methods
- A. V. Okrugin Origin of platinum-group minerals from dispersed elements to nuggets in mafic-ultramafic intrusive rocks.
- L. Perevozchikov Platinum group elements in sulfide bearing black shale ores, process materials and enrichment tailings from Zun-Kholba gold deposits (Russia)
- S. V. Petrov Applied PGE mineralogy and ore beneficiation of the Galmoenan deposit, Northern Kamchatka
- J. A. Proenza Platinum group minerals in the saprolitic horizon of Falcondo Ni-laterite deposits, Dominican Republic
- P. V. Raju Using Magnetite as an Indicator Mineral, Step 1: Calibration of LA-ICP-MS
- M. Satya PGE Mineralization in the late Archaean Sittampundi Layered Complex, Southern India
- N. D. Tolstykh Platinum lode deposits in the Galmoenanskiy and Svetloborskiy massifs (Ural-Alaskan type)
- F. Zaccarini Unusual PGE-rich chromitite in the "Butyrin-veins" of the Kytlym Ural-Alaskan complex, Northern Urals

Core Displays

The following companies had cores on display outside Alumni Hall on Monday, Tuesday, and Wednesday during coffee breaks and the poster sessions:

Duluth Metals Ltd.
Magma Metals Ltd.
Marathon PGM Corporation
Noront Resources Ltd.
North American Palladium Ltd.
Peck Geoscience
QuadraFNX Mining Ltd.
Wallbridge Mining Company Ltd.
Xstrata Nickel

Exhibits

The following sponsors had exhibits on display in the Fraser Auditorium Lobby on Monday, Tuesday, and Wednesday:

Mineral Exploration Research Centre
Mineralogical Association of Canada
Society of Economic Geologists

LOCAL ORGANIZING COMMITTEE

Chairman	Prof. Michael Leshar (Laurentian University)
Treasurer	Edward Debicki (Geoscience Laboratories)
Abstracts	Dr. Pedro Jugo (Laurentian University) Dr. James Mungall (University of Toronto) Heather Brown (Ontario Geological Survey)
Poster Displays	Nicole Tardif (Laurentian University)
Field Trips	Dr. Michael Easton (Ontario Geological Survey) David King (QuadraFNX Mining)
Core Displays	David King (QuadraFNX Mining)
Registration	Merilla Clement (Geoscience Laboratories)
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Transportation	Dr. Phil Thurston (Laurentian University)
Catering	Ruth Debicki (Ontario Geological Survey)
Accommodation	Dr. Bruno Lafrance (Laurentian University)
Facilities	Dr. Douglas Tinkham (Laurentian University)
Guest Program	Olga Brinkman, Juliet McDonald, and Lynda James
Photographer	Beatrice Ulrich
Session Organizers	Prof. Sarah-Jane Barnes (Université du Québec à Chicoutimi), Dr. James Brenan (University of Toronto), Dr. Gordon Chunnnett (Consultant), Dr. Michelle Huminicki (Brandon University), Prof. Michael Leshar (Laurentian University), Dr. Peter Lightfoot (Vale), Dr. David Peck (Consultant), and Dr. Paul Sylvester (Memorial University)
Workshop Leaders	Dr. Stephen Barnes (CSIRO) and Dr. Marco Fiorentini (University of Western Australia), Dr. James Mungall (University of Toronto), and Dr. James Miller (University of Minnesota–Duluth) and Dr. James Scoates (University of British Columbia)
Surface Field Trips	Brian Atkinson, Dr. Michael Easton, Sonia Préfontaine, and Mark Smyk (Ontario Geological Survey), Dr. Paul Golightly (Golightly Geoscience), Dr. Jacob Hanley (St. Mary's University), Dr. Michel Houlié (Geological Survey of Canada), Dr. Richard James (Laurentian University), Dr. Scott Jobin-Bevans (Caracle Creek International Consulting), Dr. James Miller (University of Minnesota–Duluth), Edward Pattison (Wallbridge Mining Company Ltd.), Dr. Richard Sutcliffe (Ursa Major Minerals Inc.), Dr. Walter Peredery (Consultant)
Underground Trips	Steve Dunlop, Steven Gregory, and Renée Parry (Levack Mine); Roger Lichty, Mynyr Hoxha, and Thomas Maxwell (McCreedy West Mine); Judd Fee and Chelsey Protulipac (Podlosky Mine)
Laboratory Tours	Bob Anderson and Pavel Vasak (MIRARCo), Ed Debicki and Marcus Burnham (Geoscience Laboratories), Prof. Balz Kamber (Laurentian University), and Lori Kormos (Xstrata Process Support)
Advisory Committee	Paul Davis (First Nickel Inc.), Sergei Diakov (BHP–Billiton), Dr. Catharine Farrow (QuadraFNX Mining), Nic Fenner (Xstrata Nickel), and Dr. Andy Fyon (Ontario Geological Survey)

DEDICATION



The 11th International Platinum Symposium is dedicated in honour of **Professor Reid R. Keays**. Professor Keays is well known to everyone in the international PGE community for his pioneering work on various aspects of PGE geochemistry for the past 30 years (including some of the initial work on the first recovered lunar samples), for having mentored over 40 graduate students and post-doctoral fellows (many of whom are now leaders in the field), for having published over 120 papers in peer-reviewed internationally circulated journals and books, and for having organized the 1st International Platinum Symposium in 1971 in Melbourne, Australia, with John Lovering. Reid has inspired all of us in one way or another, and we are especially delighted to be able to honour him in Sudbury - the location of some of his very earliest and very latest research on Ni-Cu-PGE mineralization.

IN MEMORIAM



The international PGE community was greatly saddened by the death of **Professor Tuomo Alapieti** in August 2007. Professor Alapieti, who spent most of his academic career at the University of Oulu, is best known for his work on the Koillismaa and Kemi igneous complexes in Finland. He organized the 10th International Platinum Symposium in 2005 in Oulu with Markku Iljana. His leadership will be greatly missed.