

## Sponsors

The following organizations made generous contributions to the 58<sup>th</sup> Annual Meeting. We thank them for their commitment to the Institute on Lake Superior Geology. For the past 50 years this organization has thrived as a result of the interest of individuals, corporations, universities and government agencies. The dedication to an exchange of scientific ideas and a passion for field trips has enabled the Institute to provide one of its primary objectives – to promote better understanding of the geology of the Lake Superior region.



RioTinto



# Program

## Wednesday May 16

- 7:30 a.m. **Field Trip 3:** Lac des Iles Pd mine  
*Leader:* John Corkery (North American Palladium Ltd.)
- 8:00 a.m. **Field Trip 1:** Sudbury Impactoclastic Debrisites at Thunder Bay  
*Leaders:* Bill Addison and Greg Brumpton
- 8:00 a.m. **Field Trip 2:** Geology of the Sibley Peninsula  
*Leaders:* Dr. Philip Fralick (Lakehead University) Mark Smyk & Riku Metsaranta (Ontario Geological Survey)
- 8:00 a.m. **Field Trip 4:** The Shebandowan greenstone belt  
*Leaders:* Alan Aubut (Sibley Basin Group Geological Consulting Services Ltd.) and Dorothy Campbell (Ontario Geological Survey)
- 6:00 p.m. **Return of Trips 1-4**
- 4:00 p.m. - 8:00 p.m. **Registration** (Barcelona Room, Travelodge Airline)
- 7:00 p.m. - 9:00 p.m. **Ice Breaker Social** (Barcelona Room, Travelodge Airline), **Poster Setup** (Tiberio Room, Travelodge Airline) and **Core Shack** (Courtyard, Travelodge Airline)

## Thursday May 17

- 7:30 a.m. - 4:00 p.m. **Registration** (Barcelona Room, Travelodge Airline)
- 8:20 a.m. - 8:30 a.m. **Introductory Remarks - Peter Hollings, Chair**

### Technical Session I

**NOTE:** Asterisk \* denotes a student eligible for a Best Student Paper Award

**Session Chairs:** Ann Wilson (Ontario Geological Survey) and Mary Louise Hill (Lakehead University)

- 8:30 a.m. **Gilbert, H.**  
*Stratigraphy and tectonic setting of Neoarchean arc volcanic rocks in the Bird River Belt, Manitoba, Canada*
- 8:50 a.m. **Chaffee, M.\*, Miller, J., Hollings, P., Heggie, G., MacTavish, A., and Bandli, B.**  
*Petrographic and geochemical study of the hybrid rock unit associated with the Current Lake Intrusive Complex, Magma Metals' Thunder Bay North Property*
- 9:10 a.m. **Brooker, B.\* and Miller, J.**  
*Geology and petrology of a Mesoproterozoic layered mafic intrusion in portions of the Brule Lake and Cherokee Lake 7.5' Quadrangles, northeastern Minnesota*
- 9:30 a.m. **Good, D., McLean, K., Epstein, R., Linnen, R., and Samson, I.**  
*Geology of the Layered Series, Coldwell Alkaline Complex, Ontario*
- 9:50 a.m. **Cundari, R.\*, Hollings, P. and Smyk, M.**  
*Petrogenesis and crustal contamination of the Nipigon sills: a geochemical and spatial re-evaluation*
- 10:10 a.m. - 10:40 a.m. **Coffee Break, Poster Session and Core Shack**

- 10:40 a.m. **Rousell, D., Petrus, J., Easton, R., Tinkham, D. and Napoli, M.**  
*The tectonometamorphic, magmatic and mineralization history of the Wanapitei Complex, Grenville Front tectonic zone, Ontario*
- 11:00 a.m. **Berkley, J.**  
*New York's Adirondack Mountains: Window to the Mesoproterozoic Grenville Orogen*
- 11:20 a.m. **Van Lankvelt, A.\*, Schneider, D., Hattori, K. and Biczok, J.**  
*Anatomy of a Mesoarchean batholith*
- 11:40 a.m. **Kuzmich, B.\*, Hollings, P. and Campbell, D.**  
*Geochemistry and petrology of the Dog Lake Granite Chain, Quetico Basin, Northwestern Ontario*
- 12:00 p.m. - 1:30 p.m. **Lunch Break, Poster Session and Core Shack (ILSG Board Meeting by invitation)**

## Technical Session II

**Session Chair:** Mark Severson (Natural Resources Research Institute) and Laurel Woodruff (USGS)

- 1:30 p.m. **Horner, S.\* and Fralick, P.**  
*Chert stromatolites in the basal Gunflint Formation, Kakabeka Falls: Primary precipitation or silicification?*
- 1:50 p.m. **Phillips, B., Dean, F. and Zaniewski, K**  
*A catastrophic breach and inter-lake flow through the Marks Moraine via Brule Creek and Cedar Creek, Thunder Bay Region, Ontario. A small but significant detail of the eastern outflow history of Lake Agassiz*
- 2:10 p.m. **Beh, B.\* and Fralick, P.**  
*Depositional processes operating on the Paleoproterozoic Gowganda ice margin: an example from the Espanola area, Ontario*
- 2:30 p.m. **Kerkermeier, L.\* and Fralick, P.**  
*Ferromanganese precipitates in lacustrine environments of Northwestern Ontario and Nova Scotia: Effects on arsenic concentration*
- 2:50 p.m. - 3:20 p.m. **Coffee Break, Poster Session and Core Shack**
- 3:20 p.m. **Frederiksen, A., Deniset, I., Bollman, T., Van der Lee, S. and Darbyshire, F.**  
*Erosion of Archean lithosphere by subduction and rifting: a tomographic image of central North America*
- 3:40 p.m. **Pesonen, L. and Veikkolainen, T.**  
*Supercontinents during the Proterozoic – A paleomagnetic view with Keweenaw data (Lake Superior) as an example*
- 4:00 p.m. **Swanson-Hysell, N., Burgess, S., Maloof, A., and Bowring, S.**  
*Temporal context of the Mamainse Point succession: a record of magmatic activity and fast plate motion across the “latent stage” of Midcontinent Rift development*
- 4:20 p.m. **Easton, R.M.**  
*The source of the Elliot Lake uranium ores: The neodymium isotope story*
- 4:40 p.m. **Medaris, G., Driese, S., Boerboom, T. and Jirsa, M.**  
*Granitic saprolites in the Lake Superior region: K-metasomatism, intensity vs. magnitude of weathering, and estimates of atmospheric pCO<sub>2</sub>*

7:00 p.m. **Annual Banquet and Award Presentation** (Barcelona Room, Travelodge Airline)

**Announcement of 59<sup>th</sup> Annual Meeting Location**

**2012 Goldich Award Presentation to Jim Miller**

**2012 Banquet Address - Dr. D. Overstreet**

*Meeting participants not registered for the banquet are welcome to attend the address*

**Friday May 18**

9:00 a.m. - 12:00 p.m. **Registration**

**Technical Session III**

**Session Chairs:** George Hudak (Precambrian Research Centre) and Mark Smyk (OGS)

8:30 a.m. **Stinson, V.\* and Hill, M.L.**

*Regional to microstructural control of gold mineralization along the Quetico-Wabigoon subprovince boundary*

8:50 a.m. **Thalhamer, E.\* and Czeck, D.**

*Analyzing ductile shear zone network geometries in the Grassy Portage Sill, Rainy Lake Region, Northwestern Ontario, Canada*

9:10 a.m. **Heggie, G., MacTavish, A., Johnson, J., Weston, R. and Ma, L.**

*Structural control on the emplacement of the TBN-Igneous Complex*

9:30 a.m. **Bailes, A., Galley, A., Paradis, S. and Taylor, B.**

*Using large synvolcanic alteration zones to explore for VMS deposits at Snow Lake, Manitoba, Canada*

9:50 a.m. **Scott, G., Karakus, M., Shinkle, D. and Mitchell, A.**

*Exploration history, mineralogy and genesis of the Black Thor chromite deposit, Ring of Fire Intrusion, Northwestern Ontario*

10:10 a.m. - 10:40 a.m. **Coffee Break, Poster Session and Core Shack**

10:40 a.m. **Bornhorst, T. and Williams, W.**

*The Copperwood sediment-hosted stratiform copper deposit, Upper Peninsula, Michigan*

11:00 a.m. **Blaske, A., Braun, G., Leier-Engelhardt, P., Mottl, R., Anderson, D. and Bornhorst, T**

*Glacial geology of the Copperwood Project, Gogebic County, Michigan, and environmental and engineering implications for site development*

11:20 a.m. **Waggoner, T and Karakus, M.**

*The Little Commonwealth exploration - an example of a SEDEX Deposit*

11:40 a.m. **Mikkelsen, L. and Conly, A.**

*Predictive water level and preliminary hydrodynamic models of Caland and Hogarth pit lakes, Atikokan, Ontario*

12:00 p.m. **Presentation of Best Student Paper Award and Eisenbrey Awards**

1:00 p.m. **Field Trip 5:** Geology of the City of Thunder Bay

**Leader:** Mark Smyk (Ontario Geological Survey)

1:00 p.m. **Field Trip 6:** Panorama Amethyst Mine

**Leader:** Steve Kissin (Lakehead University)

- 1:00 p.m.    **Field Trip 7:** Port Arthur building stone walking tour  
                  **Leader:** Peter Hinz (Ontario Geological Survey)
- 6:00 p.m.    **Return of Trips 5-7**
- 7:00 p.m.    **BBQ** (Whitewater Golf Club - bus service provided leaving from the Travelodge Airline  
                  beginning at 6.30 p.m.)

### Poster Presentations

**Baumann, S. and Cummings, K.**

*Bedrock Geology of Copper Falls State Park, Ashland County, Wisconsin*

**Boerboom, T.**

*Bedrock geologic map of Morrison County, Central Minnesota*

**Bollmann, T.\*, Van der Lee, S., Frederiksen, A., Lou, X.**

*Preliminary results of P- and S-wave delay times in the Superior Region from transportable array and SPREE stations*

**Buchholz, T., Falster, A. and Simmons, W.**

*Accessory minerals of a roadside pegmatite, Orr, Minnesota*

**Craddock, S.\* and Craddock, J.**

*Strain variations in carbonates across the Proterozoic Grenville Orogen*

**Cundari, R.\*, Hollings P., Scott, J. and Campbell, D.**

*Geology and geochemistry of the Coubran Lake Basalts, a Midcontinent Rift-related sequence within the central Coldwell Complex, Marathon, Ontario*

**Gaspar, B\*, and Hill, M.L.**

*The black line faults of the Red Lake gold mines, Ontario*

**Gasparotto, M.\*, and Hill, M.L.**

*A microstructural study of the Otjikoto Deposit, Namibia: Inferences from gold mineralization in the Superior Province*

**Goscinak, C.\* and Hansen, V.**

*Quartz Fabric analysis of the Kawishiwi Shear Zone, NE Minnesota*

**Heim, N., Scott, H., Kilduff, R., Rahtz, C., Vial, A., Young, S., Mahr, C., and Hudak, G.**

*Preliminary bedrock geology map of the Eastern part of Lake Vermilion State Park, St. Louis County, NE Minnesota*

**Hudak, G., Monson Geerts, S., Zanko, L., Severson, A., Severson, A. and Bandli, B.**

*The Minnesota Taconite Workers Health Study: Environmental Study of Airborne Particulates - 2012 Update*

**Jirsa, M.**

*Bedrock geologic map of the Crane Lake and Brule Narrows 30'X60' quadrangles, Quetico subprovince, northern Minnesota*

**Jirsa, M., Baggetto, L., Eliason-Johnson, G., Hansen, D., Hoxsie, E., Kilpatrick, K.**

*Reconnaissance geologic mapping of Neoproterozoic rocks in the central Boundary Waters Canoe Area Wilderness by students of the Precambrian Research Center's 2011 field camp.*

**Johnson, T.\*, Shannon, J., Boerboom, T., Wendlandt, R.**

*Geochemistry of mafic dikes from the Carlton Dike Swarm in Minnesota*

**Kern, A.\*, Kulakov, E., Smirnov, A. and Diehl, J.**

*Paleomagnetism of the alkaline Coldwell Complex: New Results, new Insights.*

**Koroscil, J.\*, Hill, M.L. and Fralick, P.**

*Thrust faulting in the Gunflint Formation north of Lake Superior*

**Kulakov, E.\*, Smirnov, A. and Diehl, J.**

*Paleomagnetism of the Geordie Lake and Silver Mountain basalts*

**Lee, A.\*, Albers, P., Miller, J., Severson, M. and Deen, T.**

*Bedrock Geologic map of the Seine Bay/Bad Vermilion Lake intrusion, Mine Centre, Ontario*

**McCormick, K. and Paterson, C.**

*Mafic intrusions along the southern boundary of the Superior Craton, SD: What is their potential for Ni-Cu-PGE mineralization?*

**Miller, J., Brooker, B., Asp, K., Leu, A., Parisi, A. and Sletten, D.**

*2011 Precambrian Field Camp Mapping in the Sawbill Lake Area, Cook County, Northeastern Minnesota*

**Pietrzak-Renaud, N.**

*A Metallogenic Model and Geometallurgical Treatment of the Basal Iron Ores within the Negaunee Iron Formation, Tilden Mine, Michigan*

**Piispa, E.\*, Smirnov, A., Pesonen, and Diehl, J.**

*Paleomagnetic, rock magnetic and geochemical data from the Keweenawan dykes and baked rocks from the Little Mountain and Sugar Loaf areas, Michigan, USA*

**Roe, C.\*, and Bjørnerud, M.**

*The ca. 1650 Ma Freedom Formation, Baraboo Range, Wisconsin: A late iron formation in the Lake Superior Region*

**Santaguida, F., Lappalainen, M., Jones, S., Voipo, T., Siikaluoma, J. and Ylinen, J.**

*Geologic Setting of the Kevitsa Ni-Cu-PGE Deposit, Central Lapland Greenstone Belt, Finland*

**Selagi, J.\*, and Hill, M.L.**

*Microstructural analysis of porcellaneous nepheline syenite, Coldwell Complex, Ontario*

**Shahabi Far, M.\*, Samson, I., Gagnon, J., Linnen, R., Good, D.**

*Textural and compositional variation in apatite and plagioclase in the Marathon PGE-Cu deposit, Northwestern Ontario; implications for fluid-rock interaction*

**Taylor-Hollings, J.**

*Quartz quarry sites in northwestern Ontario: A new 'prospect' for geoarchaeologists investigating lithic raw material sources*

**Van der Lee, S., Frederiksen, A., Bollmann, T. and Spree Team.**

*SPREE: Field experiment to study deep structure of the Midcontinent Rift*

**Vaughan, A.\*, Swanson Hysell, N. and Feinberg, J.**

*Paleomagnetic data in stratigraphic context from 1.1 Ga Osler Group basalt flows on Simpson Island, Ontario: Evidence for rapid plate motion of Laurentia in the late Mesoproterozoic*

**Wilson, G. and McCausland, P.**

*The curious meteorite harvest of the Lake Superior Region, I. Overview.*

**Wilson, G. and Kissin, S.**

*The curious meteorite harvest of the Lake Superior Region, II. Gems in the Rough*

**NOTE: Asterisk \* denotes a student eligible for a Best Student Paper Award**

### **Saturday May 19**

6:00 a.m. **Field Trip 12:** Musselwhite gold mine (participants should check in at the Wasaya Airlines counter at Thunder Bay Airport by 6 AM for a 7 AM departure)

**Leaders:** John Biczok (Musselwhite Mine)

8:00 a.m. **Field Trip 8:** Highway 527 Transect

**Leaders:** Mark Smyk (OGS) and Philip Fralick (Lakehead University)

8:00 a.m. **Field Trip 9:** Rehabilitation of the Past-Producing Shebandowan and North Coldstream Mines

**Leader:** Mark Puumala (OGS)

8:00 a.m. **Field Trip 10:** Geoarchaeology of Thunder Bay

**Leaders:** Scott Hamilton (Lakehead University)

8:00 a.m. **Field Trip 11:** Midcontinent rift intrusions

**Leaders:** Rob Cundari & Pete Hollings (Lakehead University) and Mark Smyk (Ontario Geological Survey)

8:00 a.m. **Field Trip 13:** Sudbury Impactoclastic Debrisites at Thunder Bay

**Leader:** Greg Brumpton

6:00 p.m. **Return of Trip 8 to Armstrong, overnight there**

6:00 p.m. **Return of Trips 9-11 & 13**

7:45 p.m. **Return of Trip 12 to Thunder Bay Airport**

### **Sunday May 20**

8:00 a.m. **Field Trip 8:** Highway 527 Transect

**Leaders:** Mark Smyk (OGS) and Philip Fralick (Lakehead University)

6:00 p.m. **Return of Trip 8**