



Association of Applied Geochemists

www.appliedgeochemists.org

SHORT COURSE: EXPLORATION GEOCHEMISTRY: FUNDAMENTALS AND CASE HISTORIES

The Association of Applied Geochemists (AAG) was asked by the Prospectors & Developers Association of Canada (PDAC) to prepare a short course on exploration geochemistry for their annual meeting in early March in Toronto (Canada) in 2018. The AAG is committed to help train the next generation of practitioners in exploration geochemistry, including young geoscientists, students just starting their careers, and experienced geologists who would like to update their exploration geochemistry knowledge. These aspects of applied geochemistry are seldom taught at the undergraduate level in university programs.



AAG exploration geochemistry short course at the PDAC in Toronto, Canada.

The short course Exploration Geochemistry: Fundamentals and Case Histories was held 2–3 March 2018. It was taught as two back-to-back one-day courses that could be taken together or individually. The material reviewed principles, methods, and developments in the application of low-temperature exploration geochemistry for surficial media by some of the most experienced practitioners in the field. Day 1 reviewed the fundamentals of exploration geochemistry; day 2 presented case studies for different deposit types and exploration methods in various parts of the world.

Below is a summary of the topics presented at the short course.

Day 1 (2 March 2018) Exploration Geochemistry Basics

Introduction to Exploration Geochemistry

Lynda Bloom, Analytical Solutions Ltd.

Design of a Successful Geochemical Survey

Lynda Bloom, Analytical Solutions Ltd

Stream Sediments, Lake Sediments, Aqueous Geochemical Methods

Matt Leybourne, Queen's University

Indicator Mineral Methods

Beth McClenaghan, Geological Survey of Canada

Geochemistry Data Validation

Pim van Geffen, Vancouver Geochemistry

Exploratory Data Analysis

Pim van Geffen, Vancouver Geochemistry

Day 2 (3 March 2018) Case Histories

Exploration Targeting using Stream Sediments in British Columbia and Yukon, Canada

Dennis Arne, Telemark Geosciences

The Sakatti Ni-Cu-PGE Sulfide Discovery (Finland) – The Role of Geochemistry from Early Stage Exploration through to Resource Definition

Christian Ihlenfeld, Anglo American

From Treetops to Massive Sulphide Mineralization using a Spectrum of Geochemical and Prospecting Techniques – the TL story, British Columbia, Canada

Colin Dunn, Colin Dunn Consulting Inc.

Extent of Glacial Dispersal of Gold Mineralization from the Naartok Gold Deposit, Hope Bay Greenstone Belt, Nunavut, Canada as Determined from Sampling Till in Frost Boils

Stu Averill, Overburden Drilling Management Ltd.

Croteau Est and Ti-pa-haa-kaa-ning Mineral Properties (Quebec and Ontario, Canada): Discovery through Two Different Approaches to Exploration

Tom Morris, Northern Superior Resources

Use of Artificial Intelligence in Interpreting Partial Extractions for Peat and Soils Survey: Examples from the Abitibi Clay Belt, Canada

Réjean Girard, IOS Services Géoscientifiques Inc.

Soil Geochemistry of Extremely Weathered Terrains: A Comparison of Fusion and Aqua Regia Digestion

Juan Carlos Ordóñez Calderón, Kinross Gold Corporation

Role of Geochemistry in the Discovery of the Salares Norte Gold Deposit, Chile

Chris Benn, Chris Benn Consulting

Exploration geochemistry in deeply weathered terrains

Dennis Arne, Telemark Geosciences

Short-course convenors were Beth McClenaghan (Geological Survey of Canada) and Lynda Bloom (Analytical Solutions Ltd)



Beth McClenaghan, Convenor

Beth McClenaghan is a graduate of the University of Waterloo and Queen's University (both Canada) and is a research scientist at the Geological Survey of Canada (GSC) where she has worked for the past 25 years. In addition to being a research scientist, Beth is Head of the Geochemistry Section at GSC. Her research has focused on developing geochemical prospecting methods in areas of glacial till and on researching indicator minerals for mineral exploration in glaciated terrains, with particular emphasis on diamonds, and precious, base, and strategic metals. She is an adjunct professor at Queen's University and supervises the indicator mineral research of several graduate students at Queen's and other Canadian universities.



Lynda Bloom, Convenor

After earning an MSc at Queen's University in geological sciences in 1981, Lynda Bloom gained experience as an exploration geochemist by planning and interpreting geochemical surveys across Canada and in many South American and African countries. She is recognized as a world-expert on assay methods and has traveled extensively to review sampling and analytical procedures. Following the Bre-X scandal, Lynda built on her experience as a laboratory manager and chemist to implement assay quality control programs for many of the world's largest mining corporations and junior exploration companies. She has published extensively and participated in many technical workshops on the application of exploration geochemistry and assay quality control.