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UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

UNIVERSITY OF JOHANNESBURG

FORMATION OF IRON OXIDE – APATITE (IOA) & IRON OXIDE – COPPER – GOLD (IOCG) MINERAL DEPOSITS

SHORT COURSE

Presented by: Adam Simon

DATES: TUESDAY 10th MAY AND WEDNESDAY 11th MAY 2022
VENUE: SCHOOL OF GEOSCIENCES, UNIVERSITY OF THE WITWATERSRAND

TO REGISTER and PAY PLEASE CONTACT: Reshmi Singh at reshmi.singh@wits.ac.za / 011-717 6564
COST: Postgraduate students R300 (or R150 for one day) R2000 (or R1200 for one day)

Day 1 – 09h00	**Day 2 – 09h00**
IOA and IOCG classification; geology and time space settings of IOA and IOCG deposits; economics of mining; structural aspects; pre- and syn- and post-mineralization; geochemical zoning	Case studies: El Laco and Los Colorados IOA deposits, Chile; Vergenoeg, South Africa; Missouri district IOA and IOCG deposits
-LUNCH-	**-LUNCH-**
Day 1 – 14h00	**Day 2 - 14h00**
Genetic models for IOA and IOCG deposits; comparison with other groups of Au, Cu, and barren systems	Case studies: Candelaria and Mantoverde IOCG deposits, Chile; Ernest Henry IOCG, Cloncurry District, Australia

SUMMARY OF COURSE:

Arthur F. Thurnau Professor
Earth & Environmental Sciences - University of Michigan, USA
Director, Michigan Research and Discovery Scholars Program (MRADS)

Iron oxide – copper – gold (IOCG) deposits (e.g., Olympic Dam), and iron oxide – apatite (IOA) deposits (e.g., Kiruna-type) deposits are important sources of their namesake metals, as well as rare earth elements (REE), U, P, Ag, Co, Bi and Nb that are economically important by-products in some deposits. Both deposit types occur globally and range in age from Late Archean to Plio-Pleistocene. IOCG and IOA deposits are commonly spatially and temporally associated with one another, and with coeval magmatism. Titanium-poor magnetite modally dominates Kiruna-type IOA deposits, whereas magnetite and (specular) hematite modally dominate IOCG deposits. Both deposit types contain metal sulfides, but only reach economic grades in IOCG deposits. This 2-day short course will focus on the evolution of IOA and IOCG deposits by focusing on each deposit type individually and then using similarities and differences between them to assess different proposed genetic models. Participants will do exercises to learn to use mineral compositions of apatite, magnetite, and pyrite to discriminate among different ore fluid source reservoirs and determine temperatures of mineralization. Magnetite composition as a fertility indicator will be discussed.