ECOLE LEMANIQUE DES SCIENCES DE LA TERRE
DES UNIVERSITES DE GENEVE ET DE LAUSANNE

Master ès Sciences in Earth sciences

Skarn-hosted gold mineralization at Coka Rakita, Bor metallogenic zone (eastern Serbia): Constraints from mineral, whole rock and S-isotope geochemistry

Contact persons

Dr. Kalin Kouzmanov (Department of Earth sciences, University of Geneva) kalin.kouzmanov@unige.ch; +41 22 379 68 93
Dr. Stefan Metodiev (Dundee Precious Metals) stefan.metodiev@dundeeprecious.com

Context

Gold skarn deposits have been subdivided into reduced, oxidized, magnesian, and metamorphic types according to the mineralogy of the dominant calc-silicate phase or the geological context. Most of the gold production from skarns is derived from oxidized skarns in which gold is mined as a by-product of copper. Most of these skarns contain <1 g/t Au, although in Cu-rich ores Au can reach higher grades. If for some Au-skarn deposits evidence exists that the highest gold grades are associated with prograde garnet-pyroxene assemblage, some deposits can be considered transitional to other mineralization styles, where the gold mineralization overprints skarn bodies under epithermal conditions.

Recently, Dundee Precious Metals has reported a major discovery of a high-grade gold deposit at Coka Rakita exploration prospect in eastern Serbia with exceptional results, just 3 km southeast from the company's Timok gold project.

Major goal of this collaborative research project is to characterize the mineral and geochemical zonation of the skarn body hosting the gold mineralization at Coka Rakita, and to combine these results with the 3D geological model developed by the company to test some potential vectoring tools for exploration.

Aims and Methods

The Master project aims to apply a combination of field and analytical techniques for quantitative mineralogy, textural analysis, and geochemical tracing to establish the relationship between skarn formation and gold mineralization. Methods to be applied: i) Detailed core logging and sampling; ii) Transmitted/reflected-light petrography; iii) Whole-rock XRF and ICP-MS; iv) QEMSCAN; v) Cathodoluminescence (SEM-CL and optical-CL); vi) EPMA and LA-ICP-MS; vi) S-isotope analysis on gold-associated sulfides.

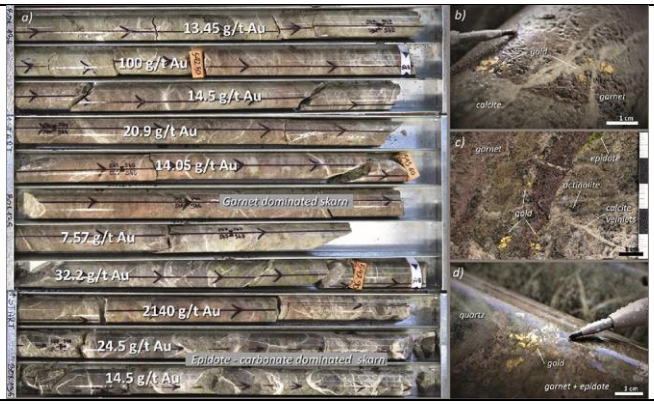
References

Banjesevic M, Cvetkovic V, von Quadt A, Ljubovic Obradovic D, Vasic N, Pacevski A, Peytcheva I (2019) New constraints on the main mineralization event inferred from the latest discoveries in the Bor metallogenic zone (BMZ, East Serbia). Minerals, 9, 672; doi:10.3390/min9110672.

Jelenkovic R, Milovanovic D, Kozelj D, Banjesevic M (2016) The mineral resources of the Bor metallogenic zone: A review. Geologia Croatica, 69(1), 143-155.

Meinert LD (1998) A review of skarns that contain gold: Mineral. Assoc. of Canada Short Course Series, v. 26, p. 359–414.

Meinert LD, Dipple GM, Nicolescu S (2005) World skarn deposits. Economic Geology 100th Anniversary Volume, 299-336.



Website

https://www.unige.ch/sciences/terre/en/groups/mineral-resources-and-geofluids/projects/

https://www.dundeeprecious.com/English/Operating-Regions/Development-Projects/timok-gold-project/default.aspx

https://www.linkedin.com/posts/dundee-precious-metals-inc_dundee-precious-metals-announces-discovery-activity-7020725816779055104-LG7D/?originalSubdomain=na

Prerequiste

Module 4d "Earth Resources"