

Diversity of copper and gold deposits in the Eastern Europe Balkan, Carpathian and Rhodopean belts: tectonic, magmatic and geochronological investigations



SCOPES Project - Conference & Field Trip: Macedonia & Serbia

Organizers: A. von Quadt, T. Serafimovski, I. Peytcheva & V. Cvetkovic

May 29 - June 02, 2012 - Izgrev Hotel, Stip, Macedonia

Program, abstracts and field guide, edited by A. von Quadt & T. Serafimovski
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- **Excursion** to Alshar mineralization (border region Macedonia – Greece) – 01.06.2012
- **Excursion** to Buchim porphyry deposit – 02.06.2012

Participant list of the workshop in Stip, May – June 2012

	First name	Name	Institution
1	Todor	Serafimovski	University Goce Delcev, Stip
2	Goran	Tasev	University Goce Delcev, Stip
3	Dobriela	Rogozareva	University Goce Delcev, Stip
4	Aneta	Donkova- Petrushova	University Goce Delcev, Stip
5	Lazar	Georgiev	University Goce Delcev, Stip
6	Violeta	Stefanova	University Goce Delcev, Stip
7	Albrecht	von Quadt	ETH Zurich
8	Stephan	Lehmann	ETH Zurich
9	Joshua	Barcikowski	ETH Zurich
10	Daniela	Gallhofer	ETH Zurich
11	Milorad	Antic	Uni Basel
12	Stefan	Schmid	ETH Zurich
13	Nino	Seghedi	Romanian Academy-Institute of Geodynamics
14	Irena	Peytcheva	BAS - Geological Institute
15	Peter	Marchev	BAS - Geological Institute
16	Valentin	Grozdev	BAS - Geological Institute
17	Stoyan	Georgiev	BAS - Geological Institute
18	Elitsa	Stefanova	BAS - Geological Institute
19	Petyo	Filipov	BAS - Geological Institute
20	Rossitsa	Vassileva	BAS - Geological Institute
21	Zlatko	Peltekovski	University Goce Delcev, Stip
22	Atanas	Hikov	BAS - Geological Institute
23	Valdica	Cvetkovic	University Belgrade, Faculty of Mining and Geology
24	Aleksandar	Pacevski	University Belgrade, Faculty of Mining and Geology
25	Kristina	Saric	University Belgrade, Faculty of Mining and Geology
26	Suzanna	Eric	University Belgrade, Faculty of Mining and Geology
27	Miodrag	Banjesevic	
28	Masa	Radivojevic	University Belgrade, Faculty of Mining and Geology
29	Aleksandar	Miskovic	University of British Columbia, Vancouver
30	Craig	Hart	Department of Earth & Ocean Sciences
31	Bojan	Djordjevic	Avala Resources DOO
32	Sinisa	Glisic	Avala Resources DOO
33	Sibila	Borojevic Sostaric	University Zagreb
34	Dejan	Kozelj	South Danube Metals DOO Beograd
35	Stela	Anatasova	BAS
36	Bayram	Artun	Teck Cominco Limited
37	Daniela	Bombol	EurOmax Macedonia DOOEL Skopje
38	Mihaela- Elena	Cioaca	Geological Institute of Romania
39	Saygun	Keles	Teck Cominco Limited

40	Yassen	Khrishev	Empire Mining Corporation
41	Kemal	Kurcan	Teck Cominco Limited
42	Georgi	Magaranov	Mundoro Capital Inc
43	John	Menzies	Cmi Capital Limited
44	Marian	Munteanu	Geological Institute of Romania
45	Gligor	Saveski	Atlas Copco AB
46	Dechev	Teo	Mundoro Capital Inc
47	Vasil	Andreev	
48	Dorin	Dordea	PROSPECTIUNI SA
49	Veselin	Kovachev	University Sofia
50	Osman	Kurtulus	
51	Dimitar	Tsotsorkov	Asarel
52	Ahmet	Tukac	
53	Bahri	Yildiz	Stratex Madencilik San. Tic. Ltd. Şti
54	Trajca	Toncic	Mining and Metallurgical Company
55	Aleksandar	Pacevski	University Belgrade, Faculty of Mining and Geology
56	Nadka Bozhkova	Vasileva	Ellatzite Mine
57	Zheyazko Hristo	Yalamov	Ellatzite Mine
58	Aurelien	Rombaut	
59		Driver	

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May 29 - June 02, 2012

"Diversity of copper and gold deposits in the Eastern Europe Balkan, Carpathian and Rhodopean belts: tectonic, magmatic and geochronological investigations".

Name	Title	Affiliation	
0 Albrecht von Quadt	Opening	ETH Zurich	8.15 - 8.30
Regional Geology			
1 Stefan Schmid	Correlation of tectonic units from the Alps to Western Turkey	ETH Zurich	8.30 - 9.00
2 Ioan Seghedi	Miocene-Quaternary basalts from East Carpathian volcanic chain, Romania: a mineral chemistry and melt inclusion study	Institute of Geodynamics of Romanian Academy, Bucharest	9.00 - 9.30
3 Sibila Borojevic Sostaric	Oligocene shoshonitic rocks of the Rogozna Mts. (Central Balkan Peninsula): evidence of petrogenetic links to the formation of Pb-Zn-Ag ore deposits	Faculty of Mining Geology, Zagreb	9.30 - 9.45
4 Kristina Saric	New LA-ICP-MS U/Pb zircon data on various granitoids from the European side of the Tethyan Mesozoic suture	Faculty of Mining and Geology, Belgrade	9.45 - 10.00
Regional Metallogeny			
5 Todor Serafimovski	Major Alpine ore districts at the territory of the Republic of Macedonia	University "Goce Delcev"-Stip	10.00 - 10.30
6 Daniela Gallhofer	Geodynamics, geochronology and Cu-Au hydrothermal ore provinces in the Banat region and Apuseni mountains	ETH Zurich, IGP	10.30 - 11.00
Coffee break			11.00 - 11.30
7 Aleksandar Pacevski	Skarn mineralizations in the Bor ore district: new evidence from study of bornite-chalcocopyrite-hematite paragenesis	Faculty of Mining and Geology, Belgrade	11.30 - 11.45
Environmental Geology			
8 Lazar Gjorgiev	Technogenous deposits and their environmental impact around the Buchim Mine	University "Goce Delcev"-Stip	11.45 - 12.00
9 Aneta Donkova-Petrushova	Au-Ag tellurides and other mineral associations in the Ilovitza Cu-Au deposit	University "Goce Delcev"-Stip	12.00 - 12.15
10 Dobriela Rogožareva	Some typical hydrothermal alterations in the Ilovitza Cu-deposit	University "Goce Delcev"-Stip	12.15 - 12.30
Lunch			12.30 - 14.00
Deposit Studies			
11 Elitsa Stefanova	Ilovitza porphyry Cu-Au deposit: sequence of vein formation and sulfide deposition	BAS, Geological Institute, Sofia	14.00 - 14.15
12 Zlatko Peltekovski	Principle metallogenic features of the Sasa Pb-Zn deposit, Republic of Macedonia	University "Goce Delcev"-Stip	14.15 - 14.30
13 Goran Tasev	New data of fluid inclusions study of the Kadiica deposit, Republic of Macedonia	University "Goce Delcev"-Stip	14.30 - 14.45
14 Violeta Stefanova	Placer gold prospecting around the Tertiary occurrences in the Republic of Macedonia	University "Goce Delcev"-Stip	14.45 - 15.00
15 Rossitza Vassileva	Compositional characteristics of sulphide mineralization from the hydrothermal Madan Pb-Zn deposits: a LA-ICP-MS study	BAS, Geological Institute, Sofia	15.00 - 15.15

16	Atanas Hikov	Rare earth element mobility during advanced argillic alteration in Assarel porphyry copper deposit, Central Srednogie, Bulgaria	Elatsite Mine	15.15 - 15.30
Magmatism				
16	Joshua Barcikowski	Magmatic evolution of the Buchim-Damjan-Borov Dol ore district - Petrology-geochemistry	ETH Zurich	15.30 - 15.45
17	Stephan Lehmann	Magmatic evolution of the Buchim-Damjan-Borov Dol ore district- Geochronology-source material	ETH Zurich	15.45 -16.00
	Coffee break			16.00 - 16.30
	Milorad Antic	More than 500 Ma of magmatic and tectonic evolution of the Serbo-Macedonian Massif (south Serbia, southwest Bulgaria and east Macedonia)	University of Basel	
18	Stela Atanasova	Magma Interaction Recorded in Amphiboles from Vitosha pluton, Western Srednogie, Bulgaria”	BAS, Geological Institute, Sofia	16.30 - 16.45
19	Petyo Filipov	Preliminary Data on the Age and Geochemistry of Mesta Volcanic Complex and Central Pirin Pluton	BAS, Geological Institute, Sofia	16.45 - 17.00
20	Stoyan Georgiev	Transect through the Cenozoic magmatism in WSW Bulgaria and Macedonia from Pirin Mountain to Kozhuf: temporal and isotope-geochemistry constraints	BAS, Geological Institute, Sofia	17.00 - 17.15
21	Valentin Grozdev	U-Pb zircon dating and zircon population analyses of the Paleogene magmatic rocks in Kyustendil and Kratovo area.	BAS, Geological Institute, Sofia	17.15 - 17.30
22				17.30 - 17.45

Types of hydrothermal alteration within the Ilovitza deposit, Republic of Macedonia

Dobriela Rogozareva and Todor Serafimovski

University "Goce Delcev"-Stip
Faculty of Natural and Technical Sciences-Stip

As a result of the recent detailed explorations, made by the company *Phelps Dodge*, and today, extended from the company *EurOmax*, Ilovitza deposit is separated to the polymetallic Cu-Au-Mo porphyry deposit, located within Tertiary intrusive complex, whose mineralization is closely related to intensive hydrothermal alterations of surrounding rocks. It is located in southeastern part of Republic of Macedonia, more precisely on Ograzden mountain, at about 17 km at a distance from Strumica city, near Ilovitza village. In the Republic of Macedonia even and broader, "Ilovitza" deposit represents one of the more significant porphyry deposits of *Cu-Au-Mo*. This deposit represents a part of several porphyry systems in eastern Macedonia and northern Greece, which are in association with igneous complexes and is one of deposits of the type of the deposit Bucovik-Kadiica in Macedonia and Scurries in Greece. In view of the regional geotectonic position, "Ilovitza" deposit belongs to Serbian-Macedonian Massif (*Zagorchev et al., 2008*) and the Serbian-Macedonian Metallogenic Zone (*Jankovic, 1977; Serafimovski, 1990*), in belt, in whose geological construction participate late Proterozoic to Palaeozoic metasediments and granitoids. The processes that took place in the frame of the SMM have caused structure of the volcanic apparatus, domes and regional dislocations, as the Tupal dislocation and dislocation Besna Kobila-Osogovo (*Serafimovski, 1990; Aleksandrov, 1992*). Actually, creation and spatial distribution of the magmatism and the ore are in function of the structural factor of a control or disjunctive-depth structures that are present in the Ograzden granite massif and have direction along the borders of the basic geotectonic units: Serbian-Macedonian Massif and the Vardar Zone (*Serafimovski, 1990*). Hydrothermal alterations, as a special mark of the deposit, with our laboratory examinations, which consisted of X-ray and microscopic examinations of the samples, were determined as an alteration that characterizes porphyry systems (*Rogozareva, 2010*). They are allocated on the basis of the typomorphic and characteristic follow minerals. Between them can be separated the following types of hydrothermal alterations: supergene sulphide alteration, weak propylitic alteration, advanced argillic alteration, quartz-sericite-pyrite ("phyllitic") alteration and potassium metasomatism with the presence of intermediate argillic alteration. In addition, in view of the mineralization especially are interesting deeper parts of the deposit, especially zones and their contact parts where the quartz-sericite-pyrite alteration is developed and potassium metasomatism with the presence of intermediate argillic alteration.

References:

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- Serafimovski, T., 1990: Metallogeny of the Lece-Chalkidiki zone. Doctoral thesis, 391 p., Stip. (in Macedonian)