

1. Raziskovalna organizacija (*Research organisation*):

Univerza v Ljubljani, Naravoslovnotehniška fakulteta, Oddelek za geologijo

2. Ime in priimek mentorja (*Name and surname of a mentor*):

izr. prof. dr. Matej Dolenc

3. Področje znanosti iz šifranta ARRS (*Primary research field*):

GEOLOGIJA - 1.06.07 Naravni viri (mineralne in energetske surovine ter voda)

4. Kontaktni e-naslov mentorja (*Contact of a mentor*):

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5. Kratek opis programa usposabljanja (*Short description of the program*):

Načrtujemo usposabljanja MR na področju raziskav nastanka rud, oblike/velikosti rudnih teles in spremenljivosti mineralne sestave in vsebnosti kovin rudišč in metod predelave rud. Široko področje raziskav rud obsega uporabo regionalnih in detajlnih metod terenskih in laboratorijskih litoloških, tektonskih, geofizikalnih, mineraloških (XRD, presevna in odsevna ter elektronska mikroskopija), geokemičnih (ICP-MS, LA-ICP-MS) in tehnoloških raziskav ter njihovo nujno potrebno sintezo, ki omogočajo razumevanje raznovrstnih procesov nastanka rudišč, določanja rudnih virov in zalog ter ocene njihove ekonomičnosti/ profitabilnosti na osnovi prepoznavanja teholoških lastnosti za definicije optimalnih metod za predelavo rud, pridobivanje koncentratov rudnih mineralov ter njihovo trajnostno proizvodnjo. Le-ta vključuje ustrezno konzerviranje prostale nestabilne rudne jalovine, njeno izoliranje in preprečitev možnega vpliva rudarjenja na živiljenjsko okolje (ali njegovo kar največjo omejitev). Oddelek za geologijo, Naravoslovnotehniška fakulteta, je bil v obeh Jugoslavijah vodilna institucija za navedeno področje raziskav. Razpoložljivo znanje in izkušnje ob kombinaciji s tradicionalni sodelovanjem z drugimi oddelki NTF (Rudarstvo in geotehnologija, Metalurgija in materiali, IJS, GEO-ZS še omogočajo izvedno svetovno primerljivih znanstvenih raziskav in prenos še razpoložljivega znanja na MR-ja.

Z zatonom rudarstva v Evropi med 80. leti prejšnjega stoletja zaradi razmeroma nizkih cen kovin je zanimanje za tovrstne raziskave in njihovo financiranje zamrlo. Projekcije bodočega svetovnega razvoja in predvsem konstantna rast porabe kovin ter pričakovano povečano povpraševanje po njih kažejo nujnost spremembe strategije raziskovanja in rudarske ter metalurške industrije v EU. Na oddelku za geologijo sodelujemo pri raziskavah enega potencialno največjih novih bodočih rudarskih projektov v Evropi. To je Zn-Pb-Cu-Ag-Au stratiformno rudišče Bashibos v jugovzhodni Makedoniji.

Najvišji nivo vzpostavljenega sodelovanja s koncesionarjem rudnega polja, podjetje Surskor, Makedonija, bo MR-ju omogočil terensko delo in laboratorijsko raziskavo vzorcev s tega rudišča, delo z najsodobnejšo znanstveno opremo, uporabo vseh razpoložljivih geoloških podatkov, terenske opreme in sodelovanje pri raziskovanju, načrtovanju in odpiranju rudišča ter vzpostaviti proizvodnje. Ob možnosti uporabe sodobne raziskovalne opreme bo možno dopolniti vedenje o nekaterih posebej pomembnih slovenskih rudiščih in/ali njihovih jaloviščih ter jih ovrednotiti v skladu z novimi razmerami na trgu kovin ali dopolniti razlago njihovega nastanka.

MR bo del še razpoložljivih znanj pridobil v Sloveniji, del pa na ustreznih evropskih ali svetovnih institucijah, ki so še ohranile tradicijo raziskav rud in jo nadgradile s sodobnimi raziskovalnimi metodami.

V Slovenije deluje le še en strokovnjak na tem področju, ki namerava delovati le še največ 6 let. MR naj bi ga po usposabljanju v strokovnem in pedagoškem smislu povsem nadomestil.

Program re-evaluacije evropskih rudišč in študij alternativne uporabe mineralov iz starih jalovišč je uvrščen v prioritete EU za naslednje srednjeročno obdobje.

Training of Young Researcher is planned on the field of Ore Genetic Studies, shape/size of orebodies and their variability of mineral composition and metals content.

The broad field of ore investigation contain the use of the regional and detailed field and laboratory lithological, tectonic, geophysical, mineralogical (XRD, translucent, reflective microscopy), geochemical (ICP-MS, LA-ICP-MS) and technological investigations and their obligatory synthesis, which enable understanding of different processes of ore deposits, ore resources and reserves and estimation of their economics/profitability on the base of recognition of technological properties for definition of optimal methods of ore beneficiation, ore mineral concentrates and their sustainable production. This include also appropriate conservation the remaining unstable ore tailings, its isolation and prevention of their potential influence and influence of the mining in general onto the life environment (or its maximal restriction).

Department of Geology, Faculty for Science and Engineering, was during pre and post 2nd WW Yugoslavia state the leading institution for the stated field of research. The available knowledge and experiences in combination with cooperation with other members of departments within the faculty (Mining and geo-technology, Metallurgy and Material, Institute Josef Stefan, Geological Survey of Slovenia can still enable conduction of the world's comparable scientific research and transfer of still available knowledge onto YR. With the decline of mining in 1980's due to low metals prices the interest for such research and their financing has diminished. Projections of future World's development and constant rise of metal consumption as well as expected rise of their demand are demonstrating the need for change of research strategy and mining as well as metallurgical industry in EU.

Department of Geology cooperate on exploration of one of potentially largest new future mining projects in EU. This is Zn-Pb-Cu-Ag-Au stratiform ore deposit Bashibos in southeast of Macedonia. The highest level of established cooperation with the concessionaire of the ore field, company Surskor, Macedonia, will enable to YR field work and laboratory investigation of samples taken from the deposit, work with the up-to-date scientific instruments, use of all available geological data, field equipment's and cooperation at exploration, designing and opening of the mine and production commissioning.

With the use of up-to-date scientific equipment's it will be possible to supplement to the knowledge on some especially important Slovene mineral deposits and/or their tailings and make their re-evaluation in accordance with new conditions on the metal market or update of their genesis.

YR will get part of still available top knowledge in Slovenia, and part on the adequate European or World's institutions, which had maintained tradition of ores research and upgraded it with the modern scientific methods.

At the moment only one expert on this field of investigation is still active. He plans to be active for 6 years more only. YR should replace him on the field of expertise and in the pedagogical sense after his training.

The program of re-evaluation of the European metal mineral deposits and investigation of the alternative use of remaining minerals from the old tailing deponies is part of the EU priorities for the next period.

izr. prof. dr. Matej Dolenc

