

Presentation

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Chair info

Chair of Mineralogy, Petrology and Materials (CMPM)

Department of Geology

Faculty of Natural Sciences and Engineering

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Head: Assist. Prof. Mirijam Vrabec

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Members of chair

- Prof. Nina Zupančič
- Assist. Prof. Matej Dolenc
- Uroš Herlec
- Assist. Prof. Simona Jarc
- Assist. Prof. Nastja Rogan Šmuc
- Assist. Prof. Mirijam Vrabec

Technical Assistants:

- Ema Hrovatin
- Miran Udovč

Fields of work

Mineralogy and crystallography+

prof. Breda Mirtič, assist. prof. Simona Skobe, DrSc, prof. Tadej Dolenc, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Structure and chemical composition of minerals for mineral materials characterisation
- Twinning, epitaxy and phase transformations in minerals
- Atomic-scale studies of initial stages of phase transformations in minerals

- Mineralogy and geochemistry of natural solid materials

Sedimentology+

prof. Tadej Dolenc, assist. prof. Matej Dolenc, DrSc, Uroš Herlec, DrSc, assist. prof. Mirijam Vrabc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Tertiary clastic sedimentary rocks of Paratethys
- Recent marine sediments
- Recent river sediments
- Recent lake sediments
- Triassic pyroclastic rocks

Petrology+

prof. Tadej Dolenc, DrSc, assist. prof. Matej Dolenc, DrSc, Uroš Herlec, DrSc, assist. prof. Mirijam Vrabc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Petrology of metamorphic rocks:
 - Ultrahigh-pressure metamorphic rocks from Pohorje Mts., NE Slovenia
 - Low grade metamorphic rocks of Štalenskoogorska formation
 - Petrological research of marbles from Pohorje Mts. (Slovenia) and Republic of Macedonia
 - A contact metamorphic rocks of Pohorje Mts. (Slovenia) and Republic of Macedonia
- Petrology of igneous rocks:
 - Igneous rocks from Pohorje Mts., NE Slovenia
 - Rock of Karavanke magmatic zone
 - Pegmatites of Eastern Alps
 - Ophiolitic complex of Vardar zone (Republic of Macedonia)
 - Problematic carbonatites of Kriva Lakavica (Republic of Macedonia)
 - Tertiary magmatism of Zletovo Kratovo area
 - Magmatism of Serbian-Macedonian province
 - Triassic bimodal volcanism of Montenegrin-Bosnian tectonic rift
- Petrology of sedimentary rocks:
 - Permian-Triassic boundary in Karavanke Mts. and West Slovenia

Non-metallic minerals+

prof. Breda Mirtič, DrSc, assist. prof. Matej Dolenc, DrSc, Uroš Herlec, DrSc

Research fields:

- Characterisation of raw materials and aggregates in ceramics, plasters and renders

Natural stone in architecture and restoration+

prof. Breda Mirtič, DrSc

Research fields:

- The weathering of natural stone in cultural heritage

Secondary raw materials+

prof. Breda Mirtič, DrSc, assist. prof. Matej Dolenc, DrSc, Uroš Herlec, DrSc

Research fields:

- Slags and fly ashes as a secondary raw material in the building industry
- Mine tailings as a secondary raw material in the building industry
- Mineral composition and feasibility study of abandoned mine tailings reprocessing

Environmental geochemistry+

prof. Tadej Dolenc, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Impact of mining on environment
- Impact of potentially toxic elements on flora and fauna
- Transfer of potentially toxic elements in water-sediment, soil-biota system
- Mariculture impact on coastal ecosystems (FISH FARMS VRGADA, central Adriatic)

Geology and geochemistry of ore deposits+

prof. Tadej Dolenc, assist. prof. Matej Dolenc, DrSc, Uroš Herlec, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc

Research fields:

- Genesis of Slovenian ore deposits
- Genesis of ore deposits in Republic of Macedonia
- Genesis of Macedonian ore deposits
- Genesis of ore deposits in Bosnia and Herzegovina
- Genesis of ore deposits in Kosovo
- Genesis of ore deposits in Zambia

Geochemistry and isotope chemistry+

prof. Tadej Dolenc, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Isotope composition of marine flora and fauna
- Isotope composition of igneous, metamorphic and sedimentary rocks
- Isotope composition of particulate organic matter (POM) in aquatic environments
- Benthic flux measurement at sediment-water interface in various aquatic environments

Gemology+

prof. Breda Mirtič, DrSc, assist. prof. Matej Dolenc, DrSc

Geoarchaeology+

prof. Breda Mirtič, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Simona Skobe, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc

Research fields:

- Source of raw materials and production technology of ceramic products and buildings
- Mineralogical and geochemical analyses of various archaeological artefacts

Medical geology+

prof. Tadej Dolenc, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Nastja Rogan Šmuc, DrSc, assist. prof. Petra Vrhovnik, DrSc, assist. Darja Komar

Research fields:

- Impact of mining on human health and health of other organisms – Heavy metals content in various crops and food (Republic of Macedonia)

Coal and oil deposits+

Uroš Herlec, DrSc, prof. Tadej Dolenc, DrSc

Research fields:

- Maceral and facial analysis of Slovenian coal
- Isotopic analysis of coal, oil and gases
- Pyrolysis of recent organic matter as a potential sink for carbon dioxide in the action against global climate changes

Genesis of metal mineral resources+

prof. Tadej Dolenc, DrSc, Uroš Herlec, DrSc, assist. prof. Matej Dolenc, DrSc, assist. prof. Petra Vrhovnik, DrSc

Research fields:

- The genesis of carbonate-hosted Pb-Zn ore deposits near Mežica (Slovenia)
- The genesis of early diagenetic Zn ore deposits in Topla (Slovenia) syngenetic and epigenetic Hg ore deposits in Idrija (Slovenia)
- The genesis of Mn ore-mineralisation in Karavanke Mts. and Julian Alps (Slovenia)
- The genesis of Pb, Zn, Hg, Fe, barite ore deposits in Sitarjevec, Litija (Slovenia)
- The genesis of contact-metamorphic Fe ore deposits in Kope (Slovenia)
- The genesis of early-carboniferous vein-type Cu-Pb-Zn-Sb-As-Fe-Ba ore deposits
- The genesis of Zn-Pb-Ag-Cu ore deposits in Brskovo, Višnjica, Žuta Prla and Razvršje, Mojkovac (Montenegro)
- The genesis of vein-type and vein-impregnation type Zn-Pb-Ag-Cu-Au ore deposits in Šuplja stena, Pljevlja (Montenegro)

- The genesis of Zn-Pb-Ba ore deposits in Veovača, Vareš (Bosnia and Herzegovina)
- The genesis of Zn-Pb-Ag-Ba ore deposits in Rupice, Vareš (Bosnia and Herzegovina)
- Genesis of ore deposits in Republic of Macedonia

Services+

- X-ray powder diffractometer
- Portable handheld X-ray fluorescence (XRF) analyser NITON
- Petrographic and petrogenetic microscopic analysis of igneous, sedimentary and metamorphic rocks in transmitted polarised light
- Microscopic analysis of ores (development of methods used for ore enrichment) and metalogenetic analysis in transmitted and reflected polarised light
- Microscopic analysis of coal in reflected polarised light
- Microscopic analysis of synthetic materials in transmitted and reflected polarised light