



APPLIED GEOLOGY

We are aimed to understand the processes, which formed the main features of earth's crust in the Western Carpathians area from the pre-Alpine period to the youngest neo-Alpine stages. This goal is addressed in an integrative way, utilizing methods and skills from a diverse areas of Earth Sciences, including geochemistry, mineralogy, petrology, geological mapping and structural analysis, remote sensing and satellite geodesy, and tectonic geomorphology and GIS modelling. Research issues are addressed in specifically or interdisciplinary oriented research projects in which we collaborate with many reputable departments. Our results are presented to scientific community, implemented to the graduate and post-graduate courses and popularized to public.

RESEARCH AREAS



Geochemistry, mineralogy and petrology

- Geochemistry and isotope geochronology of magmatic rocks
- Mineralogy of rocks and mineral raw materials
- Genetic study of various mineralization types

Structural geology and palaeotectonics

- Paleotectonic evolution of the Western Carpathians key areas
- Structural analysis and tectonic evolution of the cover nappes

Neotectonics, tectonic geomorphology and landform dynamics

- Dynamics of landslides and hillslope processes
- Tectonics and topography – neotectonic and morphotectonic evolution of the Western Carpathians

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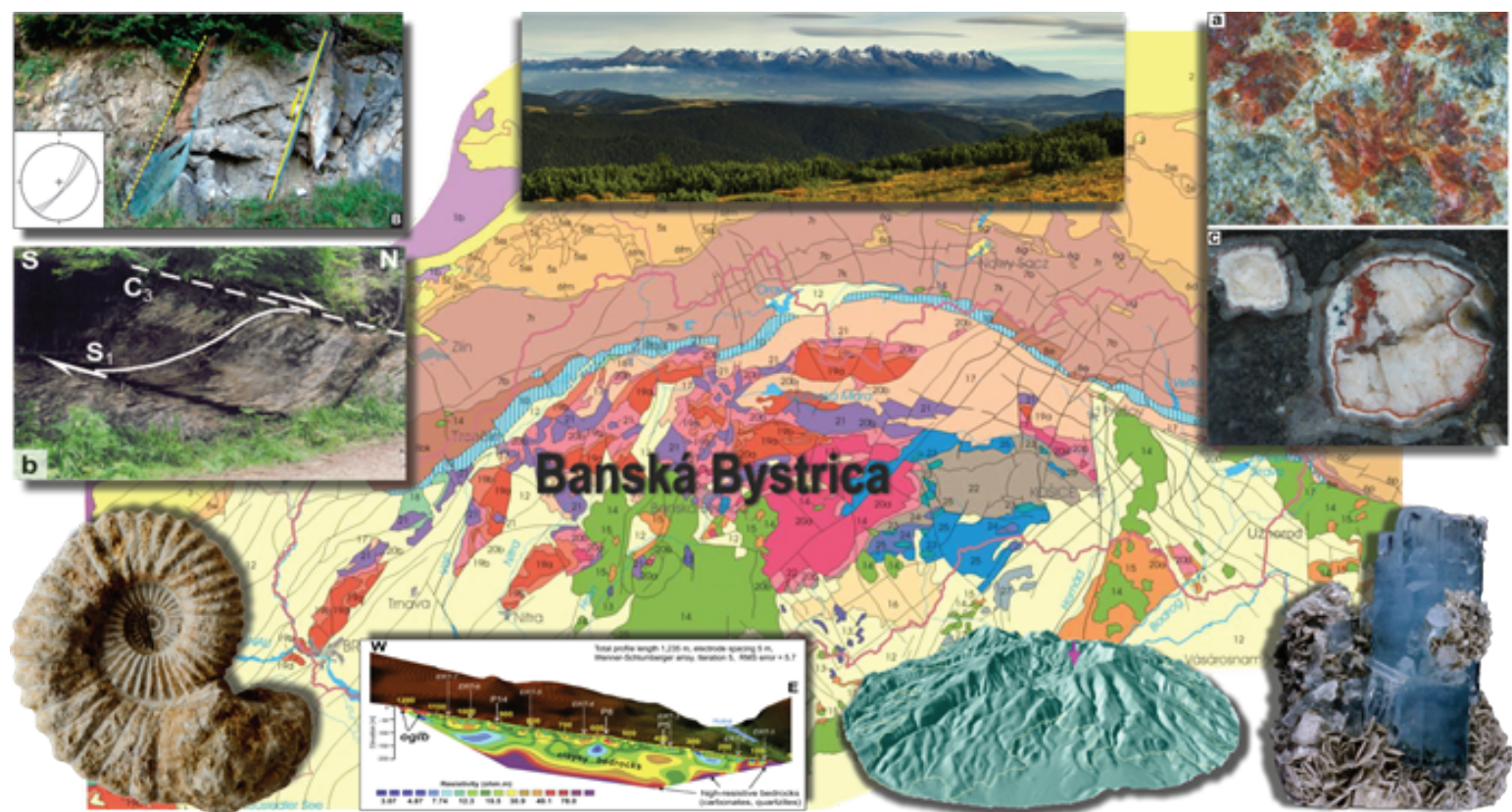
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KEY RESEARCH EQUIPMENT



Laboratory research: optical microscopy: Nikon Eclipse LV100Pol microscope mounted with a high-resolution camera and supported by the NIS-Elements D 3.10 software for image processing and analysis, Binocular stereoscopic microscope Nikon SMZ-1500 with SD-Fi2 camera, ArcGIS Desktop 10.x, complete digitized map data (DMR-3 digital embossing model and others)

Field work: complete field equipment - hammers, geological compasses, professional GPS, field tablets, sampling devices including handheld drills

PROJECTS



- 2016-2019 Interaction models of crustal and mantle rocks with fluids in accretionary wedges of the Western Carpathians, eastern Alps and northern Turkey; correlation of P-T-X-t parameters (APVV-15-0050)
- 2015-2017 Geochemistry and geochronology of the dyke rocks from the Western Carpathians (VEGA 1/0650/15)
- 2012-2015 A new synthesis of the Western Carpathians landform evolution - preparation of the database for testing of key hypothesis (APVV-0625-11)
- 2011-2014 Metaultramafics, an indicator of mechanism of crust-mantle interactions, recycling and exhumation in orogenic wedge (W. Carpathians, eastern Alpine margin) (APVV-081-10)
- 2010-2011 Dynamics of slope movements - synthesis of geological, geomorphological and hydrological aspects (VEGA 1/0157/10)
- 2016-2018 Multimedia textbook from basic of structural geology (KEGA 055 UMB-4/2016)
- 2011-2013 Applied geology - new study program II. university degree (KEGA 011 UMB-4/2014)
- 2006-2010 Cognitive guidebook to the geological and geographical localities at Central Slovakia APVV LPP-0362-06)

OFFER



We offer experience and knowledge in geochemistry, mineralogy and petrology, structural geology and tectonics, which are focused on:

- comprehensive research of rocks, rock forming, ore and non-ore minerals,
- mineralogical evaluation of mineral raw materials,
- search for radioactive anomalies in the investigated area,
- geological mapping and structural analysis,
- interpretation of brittle structures and paleostress evolution of selected localities in Western Carpathians,
- GIS-based morphotectonic analysis of selected areas
- advanced data processing and spatial analysis (Stereonet, GeOrient, ArcGIS, Statistica,), interpretation and modeling.



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Members of research team



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Mgr. Štefan Ferenc, PhD.



Mgr. Viera Šimonová, PhD.

Collaboration



Earth Science Institute of the Slovak Academy of Sciences



Comenius University:
Department of Geology and Paleontology,
Department of Mineralogy and Petrology,
Department of Physical Geography and Geoecology



University of Ostrava:
Department of Physical Geography and Geoecology