

ARTEM POLEZHAEV

PROFIL

PhD researcher in applied geology at Charles University and the Czech Academy of Sciences, specializing in rock anisotropy and thermally induced degradation processes.

My work combines experimental rock mechanics, ultrasonic methods, acoustic emission, and advanced data analysis to investigate the evolution of rock properties under varying stress and temperature conditions.

WORK EXPERIENCE

09.2025 – PRESENT

PHD RESEARCHER

The Institute of Rock Structure and Mechanics, Czech Academy of Sciences (CAS)

- Conducting experimental research in rock mechanics and anisotropy
- Designing and performing laboratory experiments (MTS, triaxial systems, ultrasonic testing) and data analysis, including:
 - ~300 UCS tests (including modified protocols)
 - ~200 Brazilian tensile tests
 - ~100 ultrasonic P- and S-wave measurements
 - ~50 permeability measurements
 - ~50 fracture toughness tests
 - ~10 Triaxial compression tests
 - ~10 High-pressure ultrasonic experiments
 - ~5 laboratory hydraulic fracturing tests
- Developing data-processing tools in MATLAB
- Contributing to scientific publications and research projects

02.2023 – 09.2025

PROFESSIONAL TECHNICAL WORKER VAV

The Institute of Geology, Czech Academy of Sciences (CAS) (02.2023 – 12.2023) and The Institute of Rock Structure and Mechanics, CAS (01.2024 – 09.2025)

- Conducted experimental work and data analysis in geological research projects
 - Independently designed and performed laboratory experiments
 - Processed and interpreted experimental data using specialized programs.
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EDUCATION

9.2025 – PRESENT

PHD IN APPLIED GEOLOGY

- Faculty of Science, Charles University
- PhD thesis: Dynamic and degradation processes in rocks: integration of ultrasonic methods, acoustic emission and the influence of elastic anisotropy

9.2022 – 9.2025

MASTER'S PROGRAM: *ENGINEERING GEOLOGY*

- Faculty of Science, Charles University
- Thesis: Mutual relation between structure/texture of Litomerice mica schist and its anisotropic properties

9.2018 – 8.2022

BACHELOR'S PROGRAM: *MANAGEMENT OF NATURAL RESOURCES (HPZ)*

- Faculty of Science, Charles University
- Thesis: Selected methods of hydrogen obtaining and mineral resources for their implementation

LANGUAGES

Russian – native speaker

Czech – (C1)

English – (B2)

Japanese – basic (currently learning)

RESEARCH INTERESTS

Rock anisotropy and its evolution under thermal stress

Experimental rock mechanics

Ultrasonic methods and acoustic emission

Rock deformation and fracture processes

Geotechnical modeling

PUBLICATIONS

- Lokajíček, T., Řimnáčová, D., Polezhaev, A.
Elastic and mechanical properties of Mrakotín granite: A comprehensive laboratory study (2026)
- Rastjoo, G., Loche, M., Racek, O., Nguyen, X.-X., Polezhaev, A., Blahůt, J.
Changes in rock mechanical properties due to high temperatures: A nationwide study in the Czech Republic (2026)
- Polezhaev, A., Blahůt, J., Lokajíček, T.
Mutual relation between structure/texture of Litoměřice mica schist and its anisotropic properties (in preparation)

PARTICIPATION IN PROJECTS

- TAČR: SS07010216 The influence of fire and high temperatures on the stability of rock massifs.
- GAČR: 25-17664S Patterns and trends of rock slope instability explained with thermal forcing in temperate climate.
- GAČR: 22-00580S The influence of rock anisotropy during hydraulic fracturing investigated by acoustic emission.
- MŠMT - Thermal degradation of rock massifs

CONTACTS

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I am interested in international research collaboration and short-term research stays.
