

Decades of scientific achievements, the gained research experience, professional staff as well as the appropriate equipment makes the Department ready to carry out the following research projects, opinions and services:

- detailed qualitative and quantitative analysis of mineral composition and chemistry of mineral substances and synthetic crystalline and amorphous phases,
- comprehensive analysis of rocks and artificial solids of multiphase composition e.g. slag and ash, ceramic products, soils, as well as substances of extraterrestrial origin,
- evaluation of chemistry and mineral composition of mineral waste and possibilities of its utilization,
- determination of selected physical and chemical properties of minerals, rocks, and other solids which determine the possibilities of their use in e.g. ceramic industry and environmental protection,
- modification of selected physical and/or chemical properties of minerals, rocks and other solid substances,
- the synthesis of selected minerals and their characterization using mineralogical methods and determination of their thermodynamic properties,
- detection and quantitative determination of harmful substances in the natural environment and indication of conditions for their neutralization,
- application and use of chemical and mineralogical analysis in other disciplines involving archeology, art history, medicine and forensics,
- the research on physical and chemical properties of natural and modified mineral-based sorbents e.g.: carbonates, iron minerals, clay minerals and zeolites.

The Department cooperates with industry: PGE Polish Mining and Conventional Power Generation, Bełchatów Coal Mine, KGHM Polska Miedź S.A. Capital Group, Czatkowice Limestone Mine, PPUH "Dolomit" Dolomite Żąbkowice Mine, Eurovia Polska and Pedmo S.A. The collaboration involves joint research projects relevant for the development of the Polish economy, implementation of projects, documentation of mineral deposits, introduction of innovative technological solutions as well as the organization of student training for the realization of MSc and PhD theses.