Curriculum vitae – Maciej Manecki

Current position
Professor at the Department of Mineralogy, Petrography and Geochemistry, AGH University of Kraków, al. Mickiewicza 30, 30-059, Kraków, Poland
Date of birth: 1960-12-30, Kraków, Poland.
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Research profile
Research interests include experimental mineralogy and geochemistry, geochronology, Polar regions, and environmental protection. Expert in apatites. Trained in very broad range of analytical techniques and instrumentation, particularly focusing on phase and chemical analysis of mineral-water interaction, precipitation and dissolution of minerals containing metals; experienced in unconventional/pushing the limits use and application of traditional analytical techniques. Extensive laboratory field experience, in all climates, including design and management of research program, budget, student and scientific personnel, coordination of experiments or fieldwork, and design of field and laboratory experiments. Designed several model field and laboratory experiments; designed procedures for synthesis of mineral analogs; analyzed, processed, and interpreted mineralogical, microbial, and geochemical data resulting from field and laboratory experiments. Orchestrated domestic and international project collaborations, including logistics and diplomacy as well as research design and execution. Currently focusing on beneficiation of rare earth elements (patent pending), as well as immobilization of As, U, and Th with the use of lead apatites.

Education
2021 professor nomination
2009 habilitation in geochemistry, AGH University of Science and Technology, Kraków, Poland
1999 PhD in geochemistry, Kent State University, Kent, Ohio, USA
1989 MSc in chemistry, Jagiellonian University, Kraków, Poland
1985 MSc in applied mineralogy, AGH University of Science and Technology, Kraków, Poland

Relevant work experience
2010 – present: professor, Department of Mineralogy, Petrography and Geochemistry, AGH University of Kraków (formerly AGH University of Science and Technology), Kraków, Poland
2023 – researcher (one semester) at the Department of Earth Sciences, *Mineralogy, Petrology and Tectonics,* Uppsala University, Uppsala
2019 – researcher (one month) at the Department of Earth Sciences, *Mineralogy, Petrology and Tectonics,* Uppsala University, Uppsala
2008 – Visiting Professor (one semester, teaching and research), Miami University, Oxford, OH, USA.
1999 – 2009 Assistant Professor, Department of Mineralogy, Petrography and Geochemistry, AGH University of Science and Technology, Kraków, Poland.
1999 – 2006 Department of Environmental Engineering, AGH International School of Technology, Kraków, Poland (collaboration effort of AGH and Illinois Institute of Technology, Chicago, IL, USA)
2005 Sturgeon Visiting Professor, Department of Geological Sciences, Ohio University, Athens, OH, USA
2004 Research Scientist, University of Notre Dame, South Bend, IN, USA
2000 – 2001 Post-doctoral Research Scientist, University of Notre Dame, South Bend, IN, USA
1993 – 1999 PhD position, Kent State University, Kent, Ohio, USA
1986 – 2018 field geologist, Geological Polar Expeditions to Spitsbergen (18 summer field seasons)

Supervised PhD projects and students
Graduated 6 PhDs as leading supervisor, all PhD students had external funding, supervised over 100 undergraduate and MSc diplomas. Ongoing 4 PhD students including joint PhD degree with Uppsala University, Sweden (expected completion 2024-26), all ongoing PhD students have external funding from Polish or foreign funds.

Grants and international projects (selected only if serving as PI)
- Polish National Research Centre research grant PRELUDIUM BIS-3 (2022 – 2026), "Low temperature transformation of monazite $(Ce,U,Th)PO_4$ into pyromorphite $Pb_5(PO_4)_3Cl$ – basic study for future technologies".
- Polish National Research Centre research grant OPUS18 (2020 – 2023), "Substitutions of rare earth elements and U in lead apatite $Pb_5(PO_4)_3Cl$".
- Polish National Centre for Research and Development NCBiR grant (2017 – 2023), principal investigator, "Applied doctoral studies in the field of engineering of functional geomaterials".
- U.S. National Research Council Twinning Program, Research Grant for collateral American-Polish research (2002-2003), PI on Polish side, financed by American Academy of Science.
- Weber State University Research Grant, (2000-2001), Ogden (UT, USA), co-PI, „Dissolution of pyromorphite in lactic acid - an atomic force microscopy study."
- Polish Ministry of Science and Higher Education Grant (2005-2008), "Crystal-chemistry of anionic substitution and thermodynamic properties of isostructural minerals from pyromorphite-mimetite-vanadinite solid solution series"

- International Polar Year research project – part of the cluster APEX (2007-2008), "Direct study of inorganic and microbial weathering of minerals in the foreland of a glacier retreating due to global warming", partially funded by AGH-University of Science and Technology
- Polish Ministry of Science and Higher Education Grant (2006-2009), co-PI, "Age and character of Torellian unconformity in Wedel Jarlsberg Land, Spitsbergen"
- Polish Ministry of Science and Higher Education Grant for Ph.D. project: "Reduction of bioavailability of Pb and As by precipitation of pyromorphite and mimetite in the presence of bacteria"
- Polish Ministry of Science and Higher Education Grant, "Mechanisms of heavy metals mobilization in soils due to bacteria active scavenging for phosphate"
- Polish Ministry of Science and Higher Education Grant for Ph.D. project (2011-12): "Microbially enhanced dissolution of pyromorphite $Pb_5(PO_4)_3Cl$ – the effect on lead remobilization"
- Polish - American research grant funded by National Science Centre, Poland, PI on Polish side, dr John Rakovan (Miami University) was a PI from US, (2011-14): "Precise determination of dissolution constant K_{sp} at 5 – 65 °C, ΔH_f, ΔG_f, ΔS and C_p of apatite solid solutions in the series Ca-Pb-P-As-OH-Cl"
- Polish Ministry of Science and Higher Education Grant (2005-2008), "Crystal-chemistry of anionic substitution and thermodynamic properties of isostructural minerals from pyromorphite-mimetite-vanadinite solid solution series"

Current and recent commissions of trust and assignments

- former Director of PhD studies at the Faculty of Geology, Geophysics and Environmental Protection, AGH Kraków
- former member of the Recruitment board for PhD college at AGH University of Science and Technology
- former member of AGH Senate for two terms
- former panel member at Polish Research Council NCN (2011)

Professional Affiliations

- Mineralogical Society of Poland
- Mineralogical Society of America
- Polish Synchrotron Radiation Society

Bibliometric information

Orcid ID: 0000-0002-4937-1836
Total number peer-reviewed original articles: 60 (Web of Science)
Total number citations for peer-reviewed articles: 1904 (Google Scholar), 639 (Web of Science, no self-citations)
h-index: 25 (Google Scholar), 16 (Web of Science); i10-index: 47 (Google Scholar)

Selection of recent publications

Waluś E., Jeleń P., Kozień D., Manecki M. 2024. Effect of arsenate and phosphate substitution on hydroxyl group in libethenite Cu_2PO_4OH - olivenite Cu_2AsO_4OH solid solution series. *Materials Chemistry and Physics*. https://doi.org/10.1016/j.matchemphys.2024.129391

Sordyl J., Staszel K., Leś M., Manecki M. 2023. Removal of REE and Th from solution by co-precipitation with Pb-phosphates. *Applied Geochemistry*. https://doi.org/10.1016/j.apgeochem.2023.105780

Sordyl J., Rakovan J., Burns P., Topolska J., Włodek A., Szymanowski J.E.S., Sigmon G.E., Majka J., Manecki M. 2023. Single-crystal analysis of La-doped pyromorphite $[Pb_5(PO_4)_3Cl]$. *American Mineralogist*. https://doi.org/10.2138/am-2022-8664

Staszel K., Jędras A., Skalny M., Dziewiątka K., Urbański K., Sordyl J., Rybka K., Manecki M. 2023. New synthetic [LREE (LREE = La, Ce, Pr, Sm), Pb]-phosphate phases. *Mineralogia*. https://doi.org/10.2478/mipo-2023-0006

Puzio B., Zhang L., Szymanowski J.E.S., Burns P., Manecki M. 2023. Thermodynamic characterization of synthetic lead-arsenate apatites with different halogen substitutions. *American Mineralogist*. https://doi.org/10.2138/am-2020-7452

Łukawska-Matuszewska K., Brocławik O., Brodecka-Goluch A., Rzepa G., Manecki M., Bolałek J. 2022. Biogeochemical and mineralogical effects of Fe-PS dynamics in sediments of continental shelf sea: Impact of salinity, oxygen conditions, and catchment area characteristics. *Science of Total Environment*. https://doi.org/10.1016/j.scitotenv.2021.151035

Puzio B., Manecki M. 2022. The prediction method for standard enthalpies of apatites using the molar volume, lattice energy, and linear correlations from existing experimental data. *Contributions to Mineralogy and Petrology*. https://doi.org/10.1007/s00410-022-01964-z

Gołuchowska K., Barker A.K., Manecki M., Majka J., Kośmińska K., Ellam R.M., Bazarnik J., Faehnrich K., Czerny J. 2022. The role of crustal contamination in magma evolution of Neoproterozoic metaigneous rocks from Southwest Svalbard. *Precambrian Research*. https://doi.org/10.1016/j.precamres.2021.106521

Wudarska A., Sordyl J., Manecki M., Zawiła A., Bajda T. 2022. Vibrational spectroscopic study of synthetic analogs of schultenite $PbHAsO_4$ – "phosphoschultenite" $PbHPO_4$ solid solution series. *Polyhedron*. https://doi.org/10.1016/j.poly.2021.115534

Wala V.T., Ziemniak G., Majka J., Faehnrich K., McClelland W.C., EE Meyer E.E., Manecki M., Bazarnik J., Strauss J.V. 2021. Neoproterozoic stratigraphy of the Southwestern Basement Province, Svalbard (Norway): Constraints on the Proterozoic-Paleozoic evolution of the North Atlantic-Arctic Caledonides. *Precambrian Research*. https://doi.org/10.1016/j.precamres.2021.106138

Puzio B., Solecka U., Topolska J., Manecki M., Bajda T. 2021. Solubility and dissolution mechanisms of vanadinite $Pb_5(VO_4)_3Cl$: effects of temperature and PO_4 substitutions. *Applied Geochemistry*. https://doi.org/10.1016/j.apgeochem.2021.105015

Puławska A., Manecki M., Flasza M., Styszko K. 2021. Origin, distribution, and perspective health benefits of particulate matter in the air of underground salt mine: a case study from Bochnia, Poland. *Environmental Geochemistry and Health*. https://doi.org/10.1007/s10653-021-00832-2

Manecki M., Kwaśniak-Kominek M., Majka J.M., Rakovan J. 2020. Model of interface-coupled dissolution-precipitation mechanism of pseudomorphic replacement reaction in aqueous solutions based on the system of cerussite $PbCO_3$ – pyromorphite $Pb_5(PO_4)_3Cl$. *Geochimica et Cosmochimica Acta*. https://doi.org/10.1016/j.gca.2020.08.015

Kośmińska K., Spear F.S., Majka J.M., Faehnrich K., Manecki M., Piepjohn K., Dallmann W.K. 2020. Deciphering late Devonian–early Carboniferous P–T–t path of mylonitized garnet-mica schists from Prins Karls Forland, Svalbard. *Journal of Metamorphic Geology*. https://doi.org/10.1111/jmg.12529

Manecki M. 2019. Lead in water and soil: speciation, toxicity, and treatment technologies. Chapter in: *Encyclopedia of Water: Science, Technology, and Society*. https://doi.org/10.1002/9781119300762.wsts0230

Ziemniak G., Kośmińska K., Schneider D.A., Majka J., Lorentz H., McClelland W.C., Wala V.T., Manecki M. 2019. Defining tectonic boundaries using detrital zircon signatures of Precambrian metasediments from Svalbard's Southwestern Caledonian Basement Province. Chapter in: *GSA Special Papers: Circum-Arctic Structural Events*. https://doi.org/10.1130/2018.2541(05)

Schneider D.A., Faehnrich K., Majka J., Manecki M. 2019. $^{40}Ar/^{39}Ar$ geochronologic evidence of Eurekan deformation within the West Spitsbergen Fold and Thrust Belt. Chapter in: *GSA Special Papers: Circum-Arctic Structural Events*. https://doi.org/10.1130/2018.2541(08)

Lempart M., Manecki M., Kwaśniak-Kominek K., Matusik J., Bajda T. 2019. Accommodation of the carbonate ion in lead hydroxyl arsenate (hydroxylmimetite) $Pb_5(AsO_4)_3OH$. *Polyhedron*. https://doi.org/10.1016/j.poly.2019.01.027