



## **doc. RNDr. Josef Zeman, CSc.**

Born in 1951, graduated as RNDr. (Doctor of Natural Science) at the Faculty of Science, UJEP Brno in 1975. Now he is a professor at Masaryk University, Brno, Czech Republic.

Formerly Vice-Dean of the Faculty of Science and Director of the Department of Geological Sciences, Masaryk University. He is engaged in basic and applied research in geochemistry, the main interests are environmental geology, geochemical modeling, atmosphere-water-rock interactions, and contaminated area remediation. Advisor of 52 bachelor's, 43 master's, and 13 PhD thesis.

### **Professional interests and expert activities:**

Investigator of numerous research projects, for example: "Research of long-term geochemical barriers for nuclear waste storage", "Parallelized transport-reaction model of contamination spread in groundwater" or "Acidification processes in sulfide wastes". Prof. Josef Zeman has been working in cooperation with DIAMO, state enterprise (e.g. research projects "The volume activity of the  $^{226}\text{Ra}$  isotope in the Rychvaldská stružka region and its relation to the sediments of the region" or "Verification of the possibility of using natural wetland systems for final treatment of mine waters in localities after deep mining"), Radioactive Waste Repository Authority (state authority – engineering barriers for deep repository), Institute of Nuclear Research, joint-stock company ("Behavior of the rock environment - Preparation of a geochemical model of a repository"), Innogy Gas Storage (chemical stimulation of production wells of underground gas storage), etc.

### **Selected publications:**

Sajjad W., Zheng G., Ma X., Xu W., Ali B., Rafiq M., Zada S., Irfan M., Zeman J. (2020): Dissolution of Cu and Zn-bearing ore by indigenous iron-oxidizing bacterial consortia supplemented with dried bamboo sawdust and variations in bacterial structural dynamics: A new concept in bioleaching. *Science of The Total Environment*, Volume 709, 2020, 136136, ISSN 0048-9697. <https://doi.org/10.1016/j.scitotenv.2019.136136>. IF2018 = 5,589

Černík M., Zeman J. (2020): Geochemical Principles of Reductive Remediation Processes. In: Filip Jan et al. (eds.): *Advanced Nano-Bio Technologies for Water and Soil Treatment*, Applied Environmental Science and Engineering for Sustainable Future, Springer Nature Switzerland AG, 978-3-030-29839-5, p. 3-17. <https://doi.org/10.1007/978-3-030-29840-1>

Němeček, J., Nechanická, M., Špánek, R., Eichler, F., Zeman, J., Černík, M. (2019): Engineered in situ biogeochemical transformation as a secondary treatment following ISCO – A field test. *Chemosphere*, Volume 237, p. 124460. doi: 10.1016/j.chemosphere.2019.124460

Borilova, S., Mandl, M., Zeman, J., Kucera, J., Pakostova, E., Janiczek, O., Tuovinen, O. H. (2018): Can Sulfate Be the First Dominant Aqueous Sulfur Species Formed in the Oxidation of Pyrite by *Acidithiobacillus ferrooxidans*? *Frontiers in Microbiology*, Volume 9, 3134, doi: 10.3389/fmicb.2018.03134

Filipska, P., Zeman, J., Vsiansky, D., Honty, M., Skoda, R. (2017): Key processes of long-term bentonite-water interaction at 90 degrees C: Mineralogical and chemical transformations. *Appl. Clay Sci.*, Volume 150, 234–243. Doi: 10.1016/j.clay.2017.09.036

Klanicová, N., Malá, A., Macíček, O., Zeman, J., Starčuk Jr., Z. (2017): MRI Study of Liesegang Patterns: Mass Transport and Banded Inorganic Phase Formation in Gel. *Applied Magnetic Resonance*, Volume 48, Issue 6, pp 545–557.