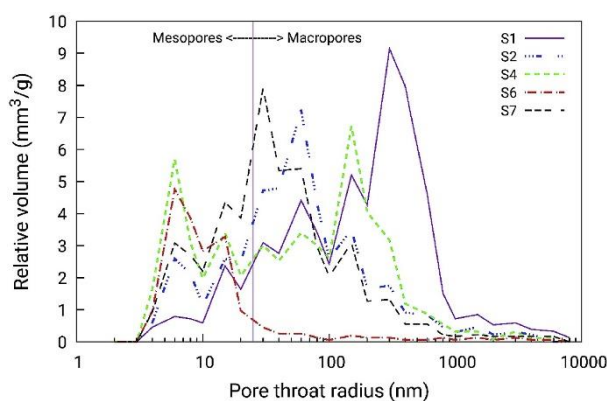


List of publications and results in 2020, 2019

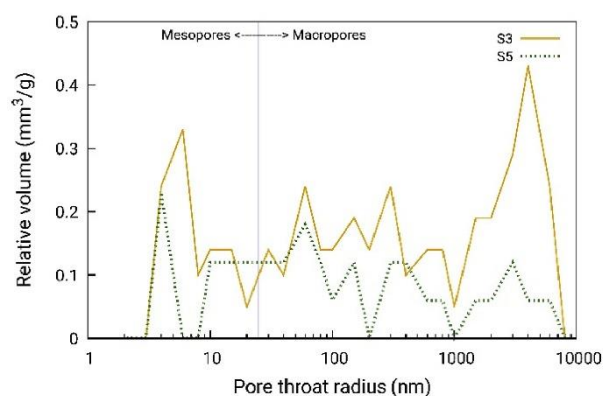
Effect of shale properties on CH₄ and CO₂ sorption capacity in Czech Silurian shales

The study involved an experimental assessment of the CO₂ and CH₄ sorption capacity of seven dark Silurian shale samples from three formations in the Barrandian Basin (Czech Republic). The high pressure excess CO₂ sorption ranged from 0.118 to 0.244 mmol/g, for the CH₄ 0.050 - 0.088 mmol/g. It was found that the CO₂ sorption capacities always depend on the quartz content, the CH₄ capacities depend on the carbon and clay minerals contents. The unique pore size distribution curves were obtained.

Publication: Řimnáčová, Daniela, Weishauptová, Zuzana, Příbyl, Oldřich, Sýkorová, Ivana, René, Miloš. Effect of shale properties on CH₄ and CO₂ sorption capacity in Czech Silurian shales. *Journal of Natural Gas Science and Engineering*. 2020, 80(AUG 2020), 103377. ISSN 1875-5100
DOI: [10.1016/j.jngse.2020.103377](https://doi.org/10.1016/j.jngse.2020.103377)



a



b

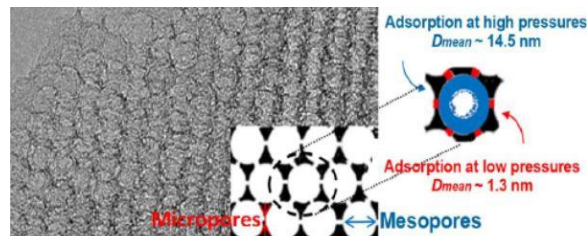
The resultant pore-size distribution curves of the Hg-porosimetry analysis show specific shapes depending on the differences between the shales. Figures present the distribution of meso- and macropores of the shale samples according to the mercury intrusion data. The pore size distribution curves are different for each shale sample, with different abundances of pores of various size classes.

The capture of CO₂ employing three-dimensionally arranged micro-mesoporous carbon

The adsorption of CO₂ on a three-dimensionally arranged micro-mesoporous carbonaceous material was studied by means of gravimetric and manometric analysis. Regular spherical mesopores with a

large pore volume provided a very high CO₂ adsorption capacity exceeding that of comparable carbon materials at high pressures. The micropores present in the walls of the spherical mesopores exhibited good CO₂ adsorption properties at atmospheric pressure.

Publication: Vorokhta M., Morávková J., Řimnáčová D., Pilař R., Zhigunov A., Šváblová M., Sazama P. (2019). CO₂ capture using three-dimensionally ordered micro mesoporous carbon, *Journal of CO₂ Utilization* 31, 124–134. DOI: [10.1016/j.jcou.2019.03.001](https://doi.org/10.1016/j.jcou.2019.03.001)

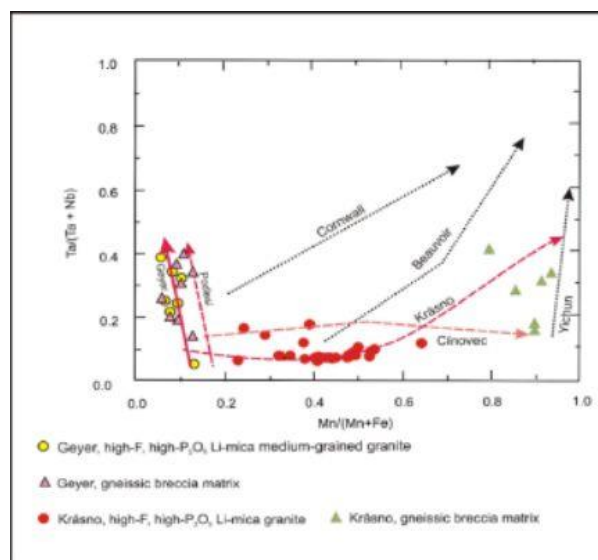


Schematic representation of the filling of pores with carbon dioxide in a three-dimensionally arranged micro-mesoporous carbon material at low and high pressures.

Nb-Ta-Ti oxides from Geyersberg (Germany) topaz granites.

Oxide minerals (Nb-Ta rutile, columbite-(Fe) and W-ixiolite) were found to comprise the principal host minerals of Nb, Ta and Ti in the topaz granites of the Geyersberg granite stock in the German part of the Erzgebirge Mountains batholith. Ixiolite was found to contain a significant concentration of Fe and relatively low values of the Mn/(Mn + Fe) and Ta/(Ta + Nb) ratios.

Publication: René M. (2019). Nb-Ta-Ti oxides in topaz granites of the Geyersberg granite stock (Erzgebirge Mts., Germany). *Minerals* 9(3), 155, 1–14. DOI: [10.3390/min9030155](https://doi.org/10.3390/min9030155)



Distribution of Ta/(Ta + Nb) and Mn / (Mn + Fe) in the columbite group minerals of selected Sn-W-Nb-Ta deposits.

Further important publications and outputs

Suchý V., Filip J., Sýkorová I., Pešek J., Kořínková D. (2019). Palaeo-thermal and coalification history of Permo-Carboniferous sedimentary basins of Central and Western Bohemia, Czech Republic: first insights from apatite fission track analysis and vitrinite reflectance modelling. *Bulletin of Geosciences* 94(2), 201–219. DOI: [10.3140/bull.geosci.1696](https://doi.org/10.3140/bull.geosci.1696)

Suchý V., Zachariáš J., Tsai H.-Ch., Yu T.-L., Shen Ch.-Ch., Světlík I., Havelcová M., Borecká L., Machovič V. (2019). Relict Pleistocene calcareous tufa of the Chlupáčova sluj Cave, the Bohemian Karst, Czech Republic: A petrographic and geochemical record of hydrologically-driven cave evolution. *Sedimentary Geology* 385, 110–125. DOI: [10.1016/j.sedgeo.2019.03.014](https://doi.org/10.1016/j.sedgeo.2019.03.014)

Kotulová J., Starek D., Havelcová M., Pálková H. (2019). Amber and organic matter from the late Oligocene deep-water deposits of the Central Western Carpathians (Orava–Podhale Basin). *International Journal of Coal Geology* 207, 96–109. DOI: [10.1016/j.coal.2019.02.006](https://doi.org/10.1016/j.coal.2019.02.006)

V. Opletal, E. Geršlová, S. Nehyba, I. Sýkorová, J. Rez (2019). Geology and thermal maturity of Namurian deposits in the Němčičky Subbasin as the South-eastern continuation of the Upper Silesian Coal Basin (Czech Republic). *Intern. Journal of Coal Geology* 216, 103323. DOI: [10.1016/j.coal.2019.103323](https://doi.org/10.1016/j.coal.2019.103323)

Havelcová M., Machovič V., Špaldoňová A., Lapčák L., Hendrych J., Adam M. (2019). Characterization of Eocene fossil resin from Moravia, Czech Republic: Insights into macromolecular structure. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 215, 176–186. DOI: [10.1016/j.saa.2019.02.058](https://doi.org/10.1016/j.saa.2019.02.058)

Špaldoňová A., Frouz J. (2019). Decomposition of forest litter and feces of *Armadillidium vulgare* (Isopoda: Oniscidea) produced from the same litter affected by temperature and litter quality. *Forests* 10, 939(1–11). DOI: [10.3390/f10110939](https://doi.org/10.3390/f10110939)

Hodák P., Vorokhta, Mykhailo, Khalakhan I., Jarkovská K., Cibulková J., Fitl P., Vlček J., Fara J., Tomeček D., Novotný M., Vorokhta Maryna, Lančok J., Matolínová I., Vršata M. (2019). New insight into the gas-sensing properties of CuOx nanowires by near-ambient pressure XPS. *The Journal of Physical Chemistry C* 123, 49, 29739–29749. DOI: [10.1021/acs.jpcc.9b09124](https://doi.org/10.1021/acs.jpcc.9b09124)

Hodák R., Perrot F., Brudanin V., Busto J., Havelcová M., Hůlka J., Jullian S., Kochetov O., Lalanne D., Loaiza P., Macl J., Mamedov F., Mizera J., Noel R., Piquemal F., Rukhadze E., Rulík P., Smolek K., Soulé B., Suchá T., Svetlík I., Štekl I., Warot G., Zampaolo M., Žaloudková M. (2019). Characterization and long-term performance of the Radon Trapping Facility operating at the Modane Underground Laboratory. *Journal of Physics G: Nuclear and Particle Physics* 46(11), 115105. DOI: [10.1088/1361-6471/ab368e](https://doi.org/10.1088/1361-6471/ab368e)

René M., Dolníček Z., Sejkora J., Škácha P., Šrein V. (2019). Uraninite, coffinite and ningyosite from vein-type uranium deposits of the Bohemian Massif (Central European Variscan belt). *Minerals* 9(2), 123, 1–21. DOI: [10.3390/min9020123](https://doi.org/10.3390/min9020123)

Vöröš D., Geršlová E., Nývlt D., Geršl M., Kuta J. (2019). Assessment of geogenic input into Bilina stream sediments (Czech Republic). *Environmental Monitoring and Assessment* 191, 114–125. DOI: [10.1007/s10661-019-7255-0](https://doi.org/10.1007/s10661-019-7255-0)

René M. (2019). Allanite from granitic rocks of the Moldanubian batholith (Central European Variscan belt). In a book: Aide M. (Editor), *Rare earth elements and their minerals*, IntechOpen, London, pp. 1–10. DOI: [10.5772/intechopen.86356](https://doi.org/10.5772/intechopen.86356)

René M. (2019). Titanite from titanite-spots granodiorites of the Moldanubian batholith (Central European Variscan belt). In a book: Ali Al-Juboury (Editor), *Mineralogy*, IntechOpen, London, pp. 1–11. DOI: [10.5772/intechopen.88359](https://doi.org/10.5772/intechopen.88359)

Patents

Process for regenerating and / or reactivating activated carbon in a reaction deck furnace and a reaction deck furnace for carrying out the process A method of regeneration of used activated carbon for its reuse for water treatment, air treatment, etc. was developed. The described furnace of floor construction is used for this purpose

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