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OCTOBER 18-19, 2017 OSAKA, JAPAN**The use of stable isotope and Rare Earth Elements for solving environmental issues in acid mine drainage areas (south-central Poland)****Zdzisław M Migaszewski**  
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Wisniowka Mt., located approx. 5 km north-east of Kielce (south-central Poland), belongs to the most interesting Acid Mine Drainage (AMD) areas throughout the world. It is built of upper Cambrian terrigenous rock formations with pyrite and hematite-goethite mineralization zones. The principal raw material is quartzite/quartzitic sandstone that have been extracted for over a century leaving abandoned quarries, tailings piles, mineral settling tanks and acid water bodies. The generation of AMD waters is initiated by oxidation of predominant As-rich gel-pyrite whose secondary products trigger subsequent reactions with metal- and REE-bearing minerals. The AMD lakes, ponds and pools are characterized by different geochemistry which patterns mineralogy and lithology of country rocks. Of the AMD water bodies, the Podwisniowka acid pit lake is highlighted by a low pH in the range of 2.2-2.4 and high concentrations of sulfates, Al, As, Co, Cr, Cu, Fe, Ni and REE. However, some strongly acidic seeps and pools contain even higher contents of trace elements, for instance as and REE up to 370 and 17.6 mg/l, respectively. It is noteworthy that two acid pit lakes show different NASC-normalized REE concentration patterns with positive medium REE (Podwisniowka) and heavy REE (Wisniowka) anomalies. Both S and O stable isotopes also display different delta values. These isotopes, REE, Y and some trace elements have been used as geochemical signatures for pinpointing localization of hotspots in the mining area as well as for determining a detrimental impact of acidic seeps and water bodies on neighboring rivers and farmer's wells.

**Biography**

Zdzisław M Migaszewski is currently a Full Professor at the Institute of Chemistry, Jan Kochanowski University in Kielce, Poland and a Chairman of the Scientific Board of the Polish Geological Institute in Warsaw. He has completed his graduation from the Faculty of Geology, University of Warsaw, Poland. He has completed his PhD and DSc degrees from the AGH University of Technology in Cracow and in 2009 was awarded a Professorship of Geology. His key interest is trace element and stable isotope geochemistry, mineralogy, sedimentary petrology and environmental analytical chemistry. He has conducted some projects in close collaboration with the US Geological Survey and University of New Mexico.

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