

## **SULFUR SPECIATION, CONCENTRATION, AND ISOTOPE SIGNATURES IN THE GABBRO AND DIABASE ROCKS OF THE CENTRAL SUDETIC OPHIOLITE, POLAND**

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**Keywords:** Sulfur isotopes; Ophiolite; Ultramafic rocks

Central Sudetic Ophiolite in southwestern Poland gives a unique insight into the geotectonic setting of the variscian orogenesis. Its constituents — Ślęza, Nowa Ruda, and Braszowice–Brzeźnica Massifs, all allow for access into a significant part of the ophiolitic sequence. Here, we provide detailed information on their sulfur concentrations and isotopes to understand the fundamental processes controlling the metal migration, which is well established in the fast-spreading-ridge ophiolite but has rarely been analyzed in slow-spreading ophiolites. One hundred forty-four rock samples were collected from those massifs and from Przeclawice IG-2 borehole, representing mainly gabbro and diabase members of the ophiolitic sequence, and studied for metal distribution. Total sulfur values ranged from 5 ppm to 5000 ppm, sulfide sulfur from 44 ppm to 3700 ppm, and  $\delta^{34}\text{S}$  from  $-5.4\text{‰}$  and  $+5.2\text{‰}$ . Diabase samples ( $n=13$ ) display values in range 89 ppm to 5056 ppm for total sulfur, 52 ppm to 3743 ppm for sulfide sulfur and  $0.72\text{‰}$  to  $5.22\text{‰}$  for  $\delta^{34}\text{S}$ . Gabbro in massifs ( $n=32$ ) show values in range 63 ppm to 1459 ppm for total sulfur, 16 ppm to 1091 ppm for sulfide sulfur and from  $-2.22\text{‰}$  to  $2.59\text{‰}$  for  $\delta^{34}\text{S}$ . In the Przeclawice IG-2 borehole samples ( $n=30$ ) have values of 64 ppm to 1866 ppm for total sulfur, 34 ppm to 1498 ppm for sulfide sulfur and  $-5.42\text{‰}$  to  $1.43\text{‰}$  for  $\delta^{34}\text{S}$ . High sulfur content and high  $\delta^{34}\text{S}$  values in diabase samples show clear signs of hydrothermal alteration tied to sea-water circulation. Relatively lower sulfur content and  $\delta^{34}\text{S}$  signatures close to  $0\text{‰}$  in gabbro from the massifs show tendency towards magmatic processes and low sulfur content and low  $\delta^{34}\text{S}$  values in gabbro from the Przeclawice IG-2 borehole shows affinity towards hydrothermal processes tied to magmatism.