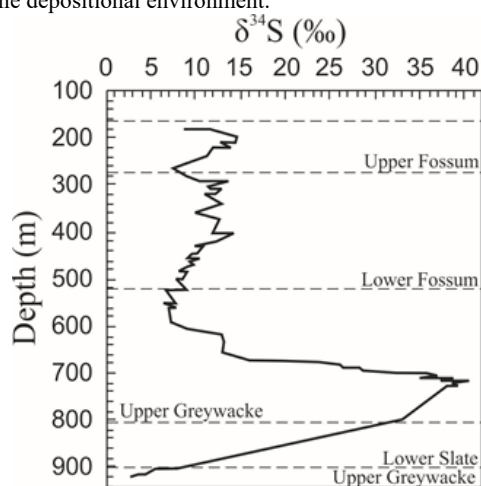


## S-isotope ratios in Paleoproterozoic host rocks of Ni-Cu sulfide deposits at the Midcontinent Rift

B.J. HAAG AND J. THAKURTA \*

Dept. of Geo. and Envir. Sciences, Western Michigan Univ.,  
Kalamazoo, MI 49008, USA (beau.j.haag@wmich.edu,  
\*correspondence: joyashish.thakurta@wmich.edu)

Studies have reported considerable variation in the  $\delta^{34}\text{S}$  values of sulfide minerals within country rocks of the magmatic-sulfide Ni-Cu Eagle and Eagle East deposits. The Michigamme Formation is a thick succession of slate, metasiltstone, and metagreywacke which contains significant quantities of sulfide minerals such as pyrite, chalcopyrite and pyrrhotite which display  $\delta^{34}\text{S}$  values ranging between 2 and 40‰ (V-CDT) and appear to systematically vary with respect to the stratigraphic sequence (Figure 1). In this study, we present the observed stratigraphic variations in  $\delta^{34}\text{S}$  ratios from these marine metasedimentary rocks and interpret the values in terms of  $\delta^{34}\text{S}$  of the ambient ocean, as well as changes introduced by diagenesis of the siliciclastic sediments in a marine depositional environment.



**Figure 1:** S-isotope ratios in the the Michigamme Formation.

While  $\delta^{34}\text{S}$  values in the hosted magmatic Ni-Cu sulfide deposits are uniformly close to the mantle range [1, 2], the wide diversity in such values observed in the host rocks indicate a complex interaction between magmatic S and crustal S in the marine siliciclastic sedimentary rocks.

[1] Ding *et al.* (2012) *Geochim. Cosmochim.* **89**, 10-30. [2] Thakurta *et al.* (2019) *Ore Geo. Rev.* **106**, 176-191.