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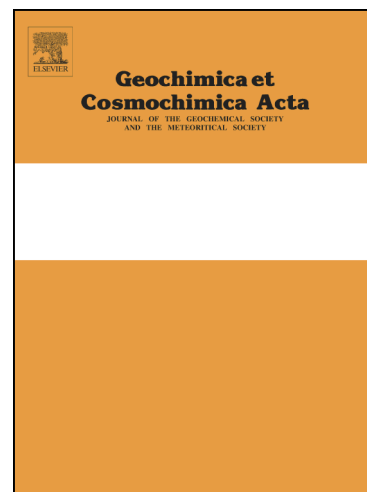
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**The behavior of chalcophile elements during magmatic differentiation as observed in
Kilauea Iki lava lake, Hawaii**

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Abstract

We quantify the behavior of Cu, Ga, Ge, As, Mo, Ag, Cd, In, Sn, Sb, W, Tl, Pb, and Bi during the differentiation of a picritic magma in the Kilauea Iki lava lake, Hawaii, using whole rock and glass differentiation trends, as well as partition coefficients in Cu-rich sulfide blebs and minerals. Such data allow us to constrain the partitioning behavior of these elements between sulfide and silicate melts, as well as the chalcophile element characteristics of the mantle source of the Kilauea lavas. Nearly all of the elements are generally incompatible during differentiation, with concentrations increasing exponentially below ~6 wt% MgO. In addition to Cu, we observe that Ag, Bi, Cd, In, Pb, and Sn are chalcophile; As, Ge, Sb, and Tl are weakly chalcophile to lithophile; and Mo, Ga, and W are lithophile. The average $D^{\text{sulfide/silicate melt}}$ values are: $D_{\text{Ag}} = 1252$

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