

Precipitation of trace elements from an evolving fluid

The distribution coefficient for a given trace element substituting for a major element in a given solid

$$D_{\text{trace}}^{\text{solid}} = \frac{(C_{\text{trace}}/C_{\text{major}})_{\text{solid}}}{(C_{\text{trace}}/C_{\text{major}})_{\text{solution}}}$$

expresses the extent of preferential inclusion ($D > 1$) or preferential exclusion ($D < 1$) of that trace element in the solid relative to the solution. Through time, this preferential inclusion or exclusion into the solid decreases or increases the trace/major ratio in the

solution, which changes the trace major ratio in the next solid precipitated from that parcel of solution. As a result, both the parcel of solution and the solids it precipitates change through time, as the examples below show.

