

“Partitioning of trace elements in silicates: modelling attempts and the harsh reality of metamorphic rocks“

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hybrid Presence/Zoom

The use of trace elements is widespread in petrology, from surface processes to melts and high-grade metamorphic rocks, generally through partition coefficients. The "Lattice Strain Model" (Blundy & Wood, 1994, 2003, etc.) has been largely used to estimate mineral/melt partition coefficients, however its approach is limited both on theoretical and applied grounds. Numerical modelling of trace elements -- cations or anions modelled as defects into crystal structures -- brings a very different perspective and allows estimating partition coefficients between minerals. It is successful in many cases but hampered by the large chemical variability of common mineral assemblages. The partitioning of chromium between garnet and clinopyroxene has been chosen as a case study. Comparing partition coefficients calculated and measured for chromium in a series of metamorphic rocks highlights the distance to equilibrium, even in high-grade metamorphic rocks. Petrological implications will be discussed.