

## Titanium isotopic insights into partial melting versus magma mixing in the Aleutian arc

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Titanium (Ti) isotopes are a well-established tracer of magmatic differentiation, [1] capable of providing useful insight into the magma series (e.g., calc-alkaline versus tholeiitic) and geodynamic setting [2,3]. In this study, we use a suite of samples from two relatively modern, well-characterized sites from the Aleutian arc thought to have little to no influence from subducted sediment in the source of the arc magmas [4,5,6] to probe how formation processes (e.g., partial melting versus fractional crystallization/magma mixing) impacts the measured Ti isotope compositions. We present Ti isotopic compositions for 18 volcanic samples from two Aleutian arc sites; Western Aleutian Seafloor Lavas from the Ingenstrom Depression, thought to have formed through partial melting of Mid-Ocean Ridge Basalt (MORB) in eclogite facies, and lavas from Korovin volcano on Atka Island, formed from fractional crystallization and/or magma mixing. Samples from the Ingenstrom Depression span a narrow range in Ti isotopic composition ( $\delta^{49}\text{Ti} = +0.031$  to  $+0.147\%$ ) with a relatively muted trend in isotope fractionation with respect to increasing silica content (50.41 to 66.30 wt%) whereas the samples from Korovin volcano span a larger range ( $\delta^{49}\text{Ti} = -0.021$  to  $+0.355\%$ ) and more pronounced Ti isotopic fractionation with increasing silica content (50.38 to 64.09 wt%). We use thermodynamic isotopic modeling (using THERMOCALC software 3.53c [7]) following previously established methods [8] to demonstrate that the rocks from Ingenstrom Depression were formed through partial melting of MORB in eclogite facies and rocks from Korovin Volcano are likely formed by magma mixing of a mafic and andesitic endmember.

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