

LETTER

Experimental study of radium partitioning between anorthite and melt at 1 atm

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ABSTRACT

We present the first experimental radium mineral/melt partitioning data, specifically between anorthite and a CMAS melt at atmospheric pressure. ²²⁶Ra disequilibria are an important chronometer of recent magmatic activity. Ion microprobe measurement of coexisting anorthite and glass phases produces a molar $D_{\text{Ra}} = 0.040 \pm 0.006$ and $D_{\text{Ra}}/D_{\text{Ba}} = 0.24 \pm 0.05$ at 1400 °C. Our results indicate that lattice strain partitioning models fit the divalent (Ca, Sr, Ba, Ra) partition coefficient data of this study well, supporting previous work on crustal melting and magma chamber dynamics that has relied on such models to approximate radium partitioning behavior in the absence of experimentally determined values.

Keywords: Radium, anorthite, plagioclase, partition coefficient, partitioning, clinopyroxene, barium, strontium