

Hydrofluoric acid solution calorimetric investigation of the effects of anorthite component on enthalpies of K-Na mixing in feldspars

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ABSTRACT

Enthalpies of solution have been measured at 50 °C in 20.1 wt% hydrofluoric acid under isoperibolic conditions for a nine-member K-Na ion-exchange series based on a disordered oligoclase specimen containing 23.1 mol% anorthite (An) component. The series displays positive enthalpies of K-Na mixing, but magnitudes are substantially reduced relative to An-free analogs. Volumes of K-Na mixing for the series are similarly reduced; the asymmetry of these with respect to composition is the opposite of that for alkali feldspars. Lower magnitudes of the mixing properties are probably related to the shortened compositional range of this series, relative to normal alkali-feldspar series, and to a 23% An structural background against which the energetic effects of K-for-Na substitution are dampened.