# High Resolution Electron Microscopy of Feldspar Weathering

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**Abstract:** High resolution imaging by transmission electron microscopy has revealed a mechanism for the weathering of intermediate microcline in a humid, temperate climate. Dissolution of the feldspar begins at the boundary of twinned and untwinned domains and produces circular holes which enlarge to form negative crystals. Amorphous, ring-shaped structures develop, about 25 Å in diameter, within the larger holes. These rings, in turn, crystallize to an arcuate phase having a 10-Å basal spacing and then to crinkled sheets of illite or dehydrated montmorillonite. The 10-Å layer silicate shows an irregular stacking sequence, including 10-, 20-, and 30-Å sequences. Included plagioclase crystals show a similar mechanism of weathering and, moreover, are more intensely weathered.

**Key Words:** Feldspar • Illite/montmorillonite • Ion thinning • Microcline • Transmission electron microscopy • Weathering

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