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# Weathering of Iron-Bearing Minerals in Soils and Saprolite on the North Carolina Blue Ridge Front: I. Sand-Size Primary Minerals

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**Abstract:** The weathering products of primary biotite, chlorite, magnetite, and almandine in mica gneiss and schist in the North Carolina Blue Ridge Front were determined. Sand-size grains of biotite, the most abundant, readily weathered mineral in the parent rock, have altered to interstratified biotite/vermiculite, vermiculite, kaolinite, and gibbsite in the saprolite and soil. Fe<sup>2+</sup>-chlorite in the parent rock was relatively resistant to chemical weathering, which appears to be confined to the external surfaces of particles. Magnetite grains in the saprolite are essentially unaltered, but those in the soil contain abundant crystallographically controlled etch pits and are coated with oxidation crusts. Almandine altered to goethite, hematite, and gibbsite as the rock weathered to saprolite. Extensively weathered almandine grains were found to contain etch pits and what appeared to be oxide coatings. Apparently, a rapid release of Fe during weathering produced hematite, whereas slower release of Fe favored the formation of goethite.

**Key Words:** Almandine • Biotite • Chlorite • Iron • Magnetite • Saprolite • Soils • Weathering

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