
The 5-M-NaOH Concentration Treatment for Iron Oxides in Soils

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Abstract: The boiling 5-M-NaOH treatment was found to aid in the identification and characterization of goethite and hematite by effectively concentrating the two Fe oxides in kaolinitic-gibbsitic soil clays. No transformations of goethite to hematite or hematite to goethite were detected, but poorly crystalline, highly Al-substituted goethite was found to dissolve and recrystallize into a more well-crystalline, less Al-substituted goethite in samples low in Si. The Si released from kaolinite was sufficient to block goethite dissolution and recrystallization in kaolinitic samples, but noncrystalline silica had to be added to samples rich in gibbsite to minimize this effect.

Key Words: Aluminum • Gibbsite • Goethite • Hematite • Iron • Kaolinite • Leaching

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