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## High-Charge Smectite in Spanish “Raña” Soils

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**Abstract:** In a study of “raña” soils of central Spain, hydroxy-interlayered 2:1 clay minerals were identified in the upper horizons and high-charge smectite in the lower horizons, with kaolinite the most abundant phyllosilicate. The high-charge smectite showed a basal spacing of 18 Å on Mg-saturation and glycerol solvation and 10 Å on K-saturation and air-drying. It is concentrated in the coarse fractions and appears to be basically a beidellite in the fine-silt fractions and a montmorillonite in the clay fractions. Pre-existing illite was probably transformed into hydroxy-interlayered 2:1 clays in the surface horizons, whereas high-charge smectite formed in the deeper horizons. These minerals, which were apparently not stable in the existing soil conditions, were the first stage in the degradation process of illite. The stable mineral in these soil profiles was kaolinite.

**Key Words:** High-charge smectite • Hydroxy-interlayer clays • Illite • Layer charge • “Raña” soils • Soil clay

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