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# A Nickel Hydroxide-Vermiculite Complex: Preparation and Characterization

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**Abstract:** A nickel hydroxide-vermiculite complex (NHVC) with  $c\sin\beta = 1.41$  nm and particle sizes from 0.075 to 0.15  $\mu\text{m}$  was obtained hydrothermally by adding nickel nitrate solution to vermiculite from Transvaal, South Africa. The quantity of nickel hydroxide included in NHVC was controlled by adjusting the concentration of the nickel nitrate solution. The thermal behavior of NHVC at 450° C or above was independent of the Ni content. However, small differences exist in the dehydration behavior of NHVC below 450° C. One-dimensional Fourier electron density analysis of the NHVC structure containing 2.43 mol of Ni per half unit cell showed that Ni cations occupy the interlayer of NHVC, and 10% of the total Ni cations is in the ditrigonal cavity of the basal-oxygen plane of the tetrahedral sheet.

**Key Words:** Clay-Inorganic Complex • One-Dimensional Fourier Electron Density Map • Nickel Hydroxide • Vermiculite

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