
Intercalation of Salts in Halloysite

R. M. Carr, N. Chaikum and N. Patterson

Chemistry Department, University of Otago, Dunedin, New Zealand
Chemistry Department, Mahidol University, Bangkok 4, Thailand
Control Laboratory, N.Z. Aluminium Smelters, Invercargill, New Zealand

Abstract: Several new salt intercalation complexes of halloysite have been prepared and characterized using X-ray powder diffraction techniques taking into account both the position and the shape of the d_{001} peaks. The amount of intercalated ion in some fully complexed halloysites has been directly determined using conventional analytical techniques. The results show that less than half of the theoretical amount of salt is intercalated into the clay; the amount of salt depending on its nature and, where hydrolyzable ions are present, on the pH. Infrared spectra taken of some complexes give an indication of the nature of the interaction within interlayer space and elsewhere. The interactions are weak and are either dipolar attractions or hydrogen bonds. The ions which show the greatest tendency to intercalate with halloysite are water structure-breaking cations or hydrogen-bonding anions.

Key Words: Halloysite • Intercalation • Interlayer • Kaolinite

Clays and Clay Minerals; April 1978 v. 26; no. 2; p. 144-152; DOI: [10.1346/CCMN.1978.0260210](https://doi.org/10.1346/CCMN.1978.0260210)
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