Stacking Order in a 14.30-Å Mg-Vermiculite

Cristina de la Calle[1], Hélène Suquet[2] and Charles-Henri Pons[3]

[1] Instituto de Ciencia de Materiales, CSIC Calle Serrano 113. 28006 Madrid, Spain
[2] Laboratoire de Réactivité de Surface et Structure CNRS U.A. 1106, Université P. et M. Curie 4 Place Jussieu, 75252 Paris Cedex 05, France
[3] Laboratoire de Cristallographie, CNRS U.A. 810, Université d'Orléans B.P. 6759, rue de Chartres, 45067 Orléans Cedex 2, France

Abstract: The stacking order of a 14.30-Å Mg-vermiculite from Santa-Olalla, Spain, has been determined from Weissenberg photographs. The results prove that the Mg-vermiculite structure is not a 2-layer polytype structure, but a semi-ordered one. Because the structure is semi-ordered, its resolution needed a dual approach: (1) a direct approach using an electron density projection along the y axis in conjunction with a one-dimensional electron-density projection onto the z axis; and (2) an indirect approach in which the observed intensities along the (0,*k*) and (1,*k*) reciprocal rods were compared to the calculated intensities given by model defect structures. The semi-ordered structure of the Mg-vermiculite results from $\pm b/3$ shifts in the stacking of the silicate layers. The shifts are randomly either along $+b$ or $-b$.

Key Words: Crystal structure • Ordering • Polytype • Stacking • Vermiculite

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