
Infrared Studies of 1-Hexene Adsorbed onto Cr³⁺-Exchanged Montmorillonite

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Abstract: When 1-hexene was adsorbed by Cr³⁺-montmorillonite at room temperature, all evidence of C=C(str) vibrations was lost. Protonation of the alkene occurred, and the secondary carbocation formed was bound at a site on the primary coordination sphere of the interlayer cation. Some of the hydrogen atoms of these primary-sphere water molecules were involved in strong hydrogen bonds to the silicate sheets, whereas others did not form such bonds, but were free and directed into the interlayer space. These latter hydrogen atoms were labile and protonated the alkene molecules.

Key Words: Adsorption • Alkene • Catalysis • Chromium • Hexene • Infrared spectroscopy • Water

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