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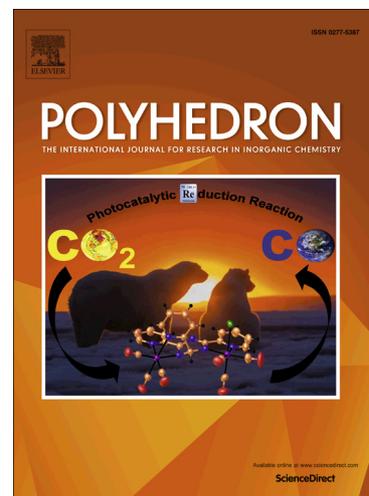
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Novel Route to Silanetriols and Silanediols based on Acetoxysilylalkoxides

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Silanols • Hydrolysis • Acetoxysilylalkoxides • Structural study • CO₂ Conversion.

Abstract

An easy and versatile method for the preparation of molecular alkoxy silanols as molecular organosilicates based on acetoxysilylalkoxides (ASA, (RO)(*t*BuO)_nSi(OAc)_{3-n} or (AcO)_{3-n}(*t*BuO)_nSi-O-R-O-Si(O*t*Bu)_n(OAc)_{3-n}, R = organic group; n = 0 or 1) is presented. These ASA precursors are prepared from silicon tetraacetate and suitable alcohols and are cleanly hydrolyzed in water to the corresponding alkoxy silanols in the absence of a base or organic solvents. The compounds were characterized by common spectroscopic methods including X-Ray structural analysis. Alkoxy silanols were tested in the catalytic conversion of CO₂ to styrene carbonate and show quantitative conversion within 15 hours at 60 °C and 1 atm of CO₂.

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