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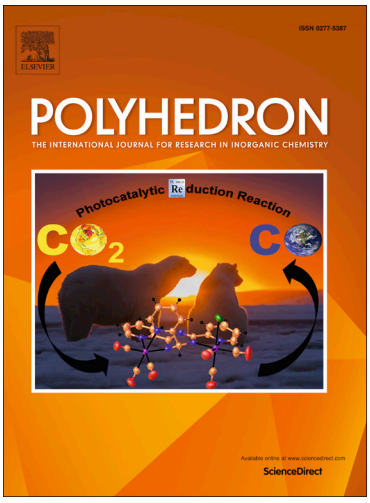

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Separation of Asymmetrically Capped Double-Decker Silsesquioxanes Mixtures

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Abstract

A synthetic path to asymmetric side-capped double-decker shaped silsesquioxanes (DDSQ) and subsequent isolation is described. By strategically using a combination of dichloro and trichlorosilane capping agents, a resultant product with mixed silanol functionalities was obtained. The use of preparatory liquid chromatography (LC) cleanly separated DDSQ compound with asymmetric functionality, and HPLC provided a quantitative technique to analyze mixture ratios. These mixture ratios did not follow the expected statistical trend due to the steric effects on the rate of capping. As a consequence, a decreased amount of the desired asymmetric DDSQ was observed in some cases. This was overcome by varying the ratio of capping agents. Overall, this work demonstrates access to asymmetric DDSQ cages is feasible, and LC is an effective separation technique.

Key Words: Double-decker shaped silsesquioxane (DDSQ), Asymmetric, Separation, HPLC

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