

Unprecedented Route to Amide-Functionalized Double-Decker Silsesquioxanes Using Carboxylic Acid Derivatives and a Hydrochloride Salt of Aminopropyl-DDSQ

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Streszczenie

An easy, efficient, and scalable synthetic procedure is described to obtain novel amide-functionalized double-decker silsesquioxanes (DDSQs). The use of mild conditions of deprotection of the BOC group, which does not result to the cleavage of the cage-like silsesquioxane structure, is reported. This method leads to the so far undescribed hydrochloride salt of aminoalkyl-DDSQ. Interestingly, the *cis/trans*-isomerization of DDSQ molecules was observed during the reaction. The resulting compounds are characterized using multinuclear NMR (^1H , ^{13}C , and ^{29}Si), MALDI-TOF, FT-IR, and elemental analysis. Moreover, crystal structures are reported for three *trans* DDSQs. The chloride salt of aminoalkyl derivative, obtained in one of the steps of the synthetic pathway, shows an intriguing structure of the crystal lattice in which large channels are present, caused by ionic interactions in the lattice. The described approach opens the way to synthesizing new DDSQ derivatives and materials using BOC-blocked amines. We believe our findings would advance investigations about new materials based on little known organic–inorganic DDSQ-based hybrids.

Słowa kluczowe

Anions, Crystal structure, Mixtures, Molecules, Silicon

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