High-yield synthesis of amido-functionalized polyoctahedral oligomeric silsesquioxanes by using acyl chlorides.

Autorzy

Mateusz Janeta

Łukasz John

Jolanta Ejfler

Sławomir Szafert

Rok wydania

2014

Czasopismo

Chemistry-A European Journal

Numer woluminu

20

Strony

15966-15974

DOI

10.1002/chem.201404153

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Homosubstituted amido-functionalized polyoctahedral oligomeric silsesquioxanes (POSS) have been synthesized by using acyl chlorides in high yields (ca. 95 %). The method proved to be superior over “conventional” syntheses applying carboxylic acids or acid anhydrides, which are much less efficient (ca. 60 % yield). A palette of aryl and alkyl groups has been used as side-chains. The structures of the resulting amide-POSS are supported by multinuclear ^{1}H, ^{13}C, ^{29}Si NMR and FTIR spectroscopy and their full conversion into octasubstituted derivatives was confirmed using mass spectrometry. We also demonstrate that the functionalized silsesquioxanes with bulky organic side-chains attached to cubic siloxane core form spherical-like, well-separated nanoparticles with a size of approximately 5 nm.

Słowa kluczowe

nanoparticles, nanostructures, organic-inorganic composities, solid-state structures, silicon

Adres publiczny

http://dx.doi.org/10.1002/chem.201404153

Strona internetowa wydawcy

onlinelibrary.wiley.com