Synthesis, characterization and thermal properties of T_8 type amido-POSS with *p*-halophenyl end-group.

Autorzy

Mateusz Janeta

Sławomir Szafert

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Streszczenie

Four new homosubstituted amido-functionalized polyoctahedral oligomeric silsesquioxanes **6**-X (X = F, Cl, Br, I) have been synthesized using Sandmeyer approach with 37–52% yields from a new diazo POSS precursor **5**-OTs. Compounds were characterized by spectroscopic methods including ^{29}Si NMR spectroscopy, X-ray crystallography (for **6**-Br), and mass spectrometry. They were extensively studied by TG and DTA techniques in flowing nitrogen and synthetic air atmospheres. Experiments were performed in the 30–1000 °C range and showed different behavior depending on the atmosphere. The residual masses obtained at different temperatures were analyzed using IR to get insight into the thermal degradation mechanism. Additionally, activation energies of the decomposition process using Kissinger method were calculated for **6**-X and its non-halogenated analog **2**.

Słowa kluczowe

polyhedral oligomeric silsesquioxanes, silsesquioxane, sandmeyer, thermal degradation, kissinger method, activation energy

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