

Название публикации:

Heptanuclear Cage Cu-II-Silsesquioxanes: Synthesis, Structure and Catalytic Activity

Авторы:

Bilyachenko, AN [1,2] ; Levitsky, MM [1] ; Korlyukov, AA [1,3] ; Khrustalev, VN [2] ; Zubavichus, YV [4] ; Shul'pina, LS [1] ; Shubina, ES [1] ; Vologzhanina, AV [1] ; Shul'pin, GB [5,6]

[1] Russian Acad Sci, Nesmeyanov Inst Organoelement Cpds, Vavilova Str 28, Moscow 119991, Russia

[2] Peoples Friendship Univ Russia RUDN Univ, Miklukho Maklay Str 6, Moscow 117198, Russia

[3] Pirogov Russian Natl Res Med Univ, Ostrovitianov Str 1, Moscow 117997, Russia

[4] Natl Res Ctr, Kurchatov Inst, Akad Kurchatova Pl 1, Moscow 123182, Russia

[5] Russian Acad Sci, Semenov Inst Chem Phys, Ul Kosygina 4, Moscow 119991, Russia

[6] Plekhanov Russian Univ Econ, Stremyannyi Pereulok, Dom 36, Moscow 117997, Russia

Сведения об издании:

EUROPEAN JOURNAL OF INORGANIC CHEMISTRY

Выпуск: 22 Стр.: 2505-2511

DOI: 10.1002/ejic.201701340

Опубликовано: JUN 15 2018

Тип документа: Article

Аннотация:

Two prismatic phenyl- (PhSiO_{1.5})₁₄(CuO)₇ (1, 29% yield) and methyl- (MeSiO_{1.5})₁₄(CuO)₇ (2, 19% yield) heptacoppersilsesquioxanes were obtained by the interaction of Cu,Na-based cage silsesquioxanes [(RSiO_{1.5})₁₂(CuO)₄(NaO_{0.5})₄] (R = Ph, Me) with 4,4-bipyridine and pyrazine, respectively, acting as silent witness ligands. Unusual molecular topologies of both compounds 1 and 2, which are the first representatives of cage silsesquioxanes with seven metal ions in their cores, were established by X-ray diffraction studies. Complex 1 was found to be an active precatalyst in the oxidation of alkanes and 1-phenylethanol to alkyl hydroperoxides and acetophenone, respectively. Alkanes were oxidized by hydrogen peroxide, and the alcohol was oxidized by tert-butyl hydroperoxide.

Ключевые слова:

Magnetic-properties; copper(ii) silsesquioxanes; hydrocarbon oxygenations; complexes; peroxides; oxidation; ligands; metallasiloxanes; chemistry; metallasilsesquioxanes