Название публикации:

Heptanuclear Fe_5Cu_2-Phenylgermsesquioxane containing 2,2′-Bipyridine: Synthesis, Structure, and Catalytic Activity in Oxidation of C-H Compounds

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Аннотация:

A new representative of an unusual family of metallagermaniumsesquioxanes, namely the heterometallic cagelike phenylgermsesquioxane $(PhGeO_2)_{12}Cu_2Fe_5(O)OH(PhGe)_2O_5(bipy)_2$ (2), was synthesized and structurally characterized. Fe(III) ions of the complex are coordinated by oxa ligands: (i) cyclic $(PhGeO_2)_{12}$ and acyclic $(Ph_2Ge_2O_5)$ germoxanolates and (ii) O^{2-} and (iii) HO^- moieties. In turn, Cu(II) ions are coordinated by both oxa (germoxanolates) and aza ligands (2,2′-bipyridines). This "hetero-type" of ligation gives in sum an attractive pagoda-like molecular architecture of the complex 2. Product 2 showed a high catalytic activity in the oxidation of alkanes to the corresponding alkyl hydroperoxides (in yields up to 30%) and alcohols (in yields up to 100%) and in the oxidative formation of benzamides from alcohols (catalyst loading down to 0.4 mol % in Cu/Fe).