# Structural, magnetic, thermal and visible light-driven water oxidation studies of heterometallic Mn/V complexes.

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Rok wydania

2015

Czasopismo

Polyhedron

Numer woluminu

88

Strony

81-89

DOI

10.1016/j.poly.2014.12.019

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

In this paper a novel synthetic route, being a paradigm of the “direct synthesis” approach, is proposed for the preparation of heterometallic Mn/V compounds by a one-pot reaction. Two synthesized complexes, $(NH_4)_2[Mn_2(HGly)(H_2O)_{10}][V_{10}O_{28}]\cdot(HGly)\cdot 2H_2O$ (**1**) and $(NH_4)_2[Mn(\beta\text{-HAla})(H_2O)_5]_2[V_{10}O_{28}]\cdot 2H_2O$ (**2**) (HGly = glycine, β-HAla = β-alanine) have been fully characterized by elemental analysis, single-crystal X-ray diffraction, cyclic voltammetry, magnetic susceptibility, FTIR and EPR spectroscopy. Thermal degradation of these compounds lead to the formation of porous, solid mixed oxides $V_2O_5/MnV_2O_6$ in a ratio of 3:2, which were analyzed by X-ray phase analysis and scanning electron microscopy with energy dispersive X-ray microanalysis (SEM/EDX). Additionally the ability of **1** and **2** to act as oxygen evolving water oxidation catalysts under visible light-driven conditions have been studied in a Clark type cell and by *ex situ* EPR spectroscopy.

Słowa kluczowe

manganese, vanadium, Direct synthesis, mixed oxides, water oxidation

Adres publiczny

http://dx.doi.org/10.1016/j.poly.2014.12.019

Strona internetowa wydawcy

http://www.elsevier.com