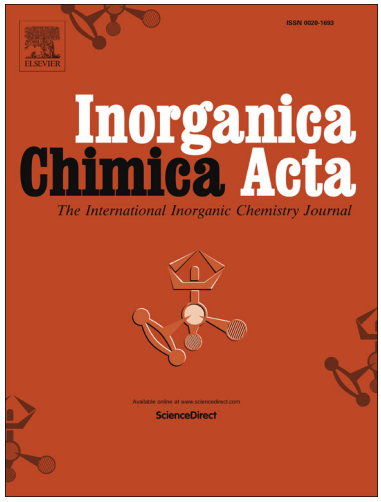

A new synthetic route for compounds prepared from keggin heteropolyacids and pyridine derivatives

F.M. Santos, H.I.S. Nogueira, A.M.V. Cavaleiro, E. de Matos Gomes, M.S. Belsley

PII: S0020-1693(16)30246-8
DOI: http://dx.doi.org/10.1016/j.ica.2016.05.017
Reference: ICA 17053

To appear in: *Inorganica Chimica Acta*

Received Date: 26 February 2016
Revised Date: 6 May 2016
Accepted Date: 7 May 2016

Please cite this article as: F.M. Santos, H.I.S. Nogueira, A.M.V. Cavaleiro, E. de Matos Gomes, M.S. Belsley, A new synthetic route for compounds prepared from keggin heteropolyacids and pyridine derivatives, *Inorganica Chimica Acta* (2016), doi: http://dx.doi.org/10.1016/j.ica.2016.05.017

A NEW SYNTHETIC ROUTE FOR COMPOUNDS PREPARED FROM KEGGIN HETEROPOLYACIDS AND PYRIDINE DERIVATIVES

F. M. Santos[1], H. I. S. Nogueira[1], A. M. V. Cavaleiro[1], E. de Matos Gomes[2], M. S. Belsley[2]

[1] CICECO, Department of Chemistry, University of Aveiro, 3810-193 Aveiro, Portugal
[2] Physics Center, University of Minho, Department of Physics, 4710-057 Braga, Portugal

Abstract:

The synthesis of inorganic/organic hybrid compounds by solid-solid reactions of the hydrated heteropolyacids $H_3[PM_{12}O_{40}]\cdot nH_2O$ (M = Mo, W) with selected substituted pyridines having different sizes and functionalities is described. Several new compounds were prepared at room temperature and characterised by infrared and UV/vis absorption spectroscopies, powder X-ray diffraction and analytical techniques. Related materials prepared by precipitation from solution were also studied and the comparison was made between results obtained with the different preparative procedures. This is the first systematic account on the acid-base reaction of solid heteropolyacids and solid pyridine derivatives, without the addition of any solvent. The obtained results indicate that the obtained crystalline powders may present physical properties different from related materials prepared by precipitation from solution.

Keywords:

Polyoxometalates; Keggin; Heteropolyacids; Pyridine derivatives; Solid-solid reaction; Mechanochemistry

Corresponding author: Prof. Ana Cavaleiro, Department of Chemistry, University of Aveiro, 3810-193 Aveiro, Portugal. Tel.: +351 234 370 734, Fax: +351 234 370 084; e-mail: anacavaleiro@ua.pt