

对苯二甲酰双环戊烯基锡钼(钨)异多核金属配合物的合成与晶体结构

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 通过对苯二甲酰双环戊二烯基三羰基钼(钨)负离子与有机锡的反应,合成了一系列的对苯二甲酰双环戊二烯基锡钼(钨)异多核金属配合物,并用IR, ^1H

NMR和元素分析对其进行了表征。结果表明,环戊二烯上的拉电子取代基极大地减弱金属负离子的亲核性,

对苯二甲酰双环戊二烯基三羰基钼(钨)负离子与 R_2SnCl_2 ($\text{R} = \text{Ph, Me, Et}$) 反应时,

仅有一个氯原子被金属负离子所取代。用X射线单晶衍射测定了化合物 $\{\text{p}-(\text{Ph}_3\text{Sn})(\text{CO})_3\text{MoC}_5\text{H}_4\text{C}(\text{O})_2\text{C}_6\text{H}_4\}$ 的晶体结构。该晶体为单斜晶系,空间群为C2/c,晶胞参数为: $a = 3.4209(10) \text{ nm}$, $b = 1.1329(3) \text{ nm}$,

$c = 1.4214(4) \text{ nm}$, $\beta = 104.466(5)^\circ$, $V = 5.334(3) \text{ nm}^3$, $Z = 4$, $R =$

0.033。两个SnMo结构单元处于桥连苯基的反位。

关键词 [环戊二烯 P](#) [锡络合物](#) [钼络合物](#) [钨络合物](#) [晶体结构](#) [结构表征](#) [红外分光光度法](#) [质子磁共振谱法](#)

分类号 [0611.662](#)

Synthesis and Crystal Structure of Terephthaloyl Bridging Cyclopentadienyl M-Sn(IV) Bonded Heteromultimetallic Complexes

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Abstract A series of heteromultimetallic complexes have been synthesized by the reaction of the dianions $\{\text{p}-(\text{CO})_3\text{MC}_5\text{H}_4\text{C}(\text{O})_2\text{C}_6\text{H}_4\}^{2-}$ ($\text{M} = \text{Mo, W}$) with $\text{R}_n\text{SnCl}_{(4-n)}$ ($\text{R} = \text{Ph, Me, Et}$; $n = 2, 3$) in 1:2 or 1:1 ratio, and characterized by elemental analysis, ^1H NMR and IR spectroscopy. The electron-withdrawing groups on the cyclopentadienyl rings greatly decrease the nucleophilicity of the metallic anions. Thus, only one chlorine atom on tin compound was replaced by the metallic anion when the dianions reacted with SnR_2Cl_2 . The crystal structure of $\{\text{p}-(\text{Ph}_3\text{Sn})(\text{CO})_3\text{MoC}_5\text{H}_4\text{C}(\text{O})_2\text{C}_6\text{H}_4\}$ was determined by X-ray structure analysis, which is monoclinic, space group C2/c with unit cell parameters: $a = 3.4209(10) \text{ nm}$, $b = 1.1329(3) \text{ nm}$, $c = 1.4214(4) \text{ nm}$, $\beta = 104.466(5)^\circ$, $V = 5.334(3) \text{ nm}^3$, $Z = 4$, $R = 0.033$. The central metal of Mo adopts a 3:4 piano stool structure, and two SnMo units are in transposition of the bridging phenyl group.

Key words [CYCLOPENTADIENE P](#) [TIN COMPLEX](#) [MOLYBDENUM COMPLEX](#) [CRYSTAL STRUCTURE](#) [STRUCTURE CHARACTERISTICS](#) [IR](#) [\$^1\text{H}\$ NMR](#)

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