

## 二( $\mu$ -叠氮)二[N,N'-二(2-吡啶甲基)乙二胺]合二镍(II)配合物的结构与磁性

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**摘要** 合成并通过元素分析、红外光谱、电子光谱等方法表征了叠氮桥联的双核配合物 $[\text{Ni}_2(\text{bispicen})_2(\mu\text{-N}_3)_2](\text{ClO}_4)_2$  [bispicen=N,N'-二(2-吡啶甲基)乙二胺]. 用单晶X射线衍射技术测定了配合物的晶体结构, 晶体属正交晶系, P212121空间群, 镍(II)离子处于变形八面体配位环境, 并采取cis- $\alpha$ 构型, 两个以 $\mu$ -1,3桥联方式配位的叠氮离子之间呈罕见的交错式非平面排列. 变温磁化率测定表明配合物两个镍(II)离子之间存在反铁磁相互作用, 基于 $H^{\wedge}=-2JS_1^{\wedge}S_2^{\wedge}$ 的磁性分析表明磁交换积分 $J=-28.1\text{cm}^{\wedge-1}$ .

**关键词** [叠氮络合物](#) [反铁磁性](#) [双核配合物](#) [吡啶P](#) [乙二胺P](#) [磁性](#) [镍络合物](#) [晶体结构](#)

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## Structure and magnetic properties of bis( $\mu$ -azido) bis [N,N'-bis(2-pyridylmethyl) ethylenediamine]dinickel(II) complex

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**Abstract** A binuclear nickel(II) complex of  $[\text{Ni}_2(\text{bispicen})_2(\mu\text{-N}_3)_2](\text{ClO}_4)_2$  [bispicen=N,N'-bis(2-pyridylmethyl) ethylenediamine] has been synthesized and characterized by means of elemental analysis, IR and electronic spectra. The crystal structure was determined by single-crystal X-ray diffraction technology. The complex crystallizes in orthorhombic space group P212121. The nickel(II) ion resides in a pseudo-octahedral environment with a cis- $\alpha$  configuration. The azidoligand bridges two Ni(II) ions in the  $\mu$ -1,3(end-to-end) mode, and unlike most polynuclear complexes with double  $\mu$ -1,3-N<sub>3</sub> bridges, where the (N<sub>3</sub>)<sub>2</sub> bridging moiety forms a plane, the two azido bridges in the present complex are non-coplanar and crossed at an angle of 49.7°. The temperature dependence of the magnetic susceptibility of the complex has been investigated and revealed an antiferromagnetic interaction between the two Ni(II) ions with the exchange integral  $J=-28.1\text{cm}^{\wedge-1}$  (based on  $H^{\wedge}=-2JS_1^{\wedge}S_2^{\wedge}$ ).

**Key words** [AZIDO COMPLEX](#) [ANTIFERROMAGNETISM](#) [DINUCLEAR COMPLEX](#) [PYRIDINE P](#) [ETHANEDIAMINE P](#) [MAGNETISM](#) [NICKEL COMPLEX](#) [CRYSTAL STRUCTURE](#)

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