

Full Papers

四氮大环-金属配合物与DNA作用的电化学及谱学研究

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**摘要** 合成了四氮大环与铜、镍、钴的配合物, 培养了单晶, 通过晶体结构测定确定了结构。利用电化学方法和光谱法研究了这些金属配合物与DNA的作用, 证明三种配合物与DNA作用的方式均为静电作用。Co(III)配合物与DNA通过静电作用形成了1:1型复合物, 其结合常数为 $3.92 \times 10^3 \text{ L} \cdot \text{mol}^{-1}$ 。

**关键词** [金属配合物](#), [晶体结构](#), [DNA](#), [电化学性质](#)

分类号

**Electrochemical and Spectroscopic Studies on the Interaction between Tetracoordinate Macrocyclic Copper(II), Nickel(II) and Cobalt(III) Complexes with DNA**

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**Abstract** Mononuclear copper(II), nickel(II) and cobalt(III) tetracoordinate macrocyclic complexes were synthesized and spectroscopically characterized. The crystal structure of the three compounds were determined by X-ray crystallography. The electrochemical experimental results indicate that the three complexes could interact with DNA mainly by electrostatic interaction. The interaction of tetracoordinate macrocyclic cobalt(III) complex with DNA was studied by cyclic voltammetry and UV-vis spectroscopy. The experimental results reveal that tetracoordinate macrocyclic cobalt(III) complex could interact with DNA by electrostatic interaction to form a 1: 1 DNA association complex with a binding constant of  $7.50 \times 10^3 \text{ L} \cdot \text{mol}^{-1}$ .

**Key words** [copper\(II\)](#), [nickel\(II\)](#), [cobalt\(III\) complexes](#), [tetracoordinate macrocyclic ligand](#), [DNA](#), [electrostatic interaction](#)

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