有机化学 1990 10 (2): 141-148 ISSN: 0567-7351 CN: 31-1320/06

芳香族羟肟过渡金属配合物及其^1^5N同位素取代红外光谱位移和结构的研究

聂崇实,陈耀焕,周澄明,曾明英,盛怀禹

中国科学院上海有机化学研究所

收稿日期 修回日期 网络版发布日期 接受日期

摘要 本文研究了芳香族羟肟过渡金属配合物的红外光谱。试用了^1^5N 和^6^3Cu, ^6^5Cu标记化合物来确定一些键的红外特征吸收频率和金属一配体键振动的吸收, 从而观察配位体与金属配位后的键能变化与配键稳定性的联系。本工作测试下列配位体和过渡金属配合物及其相应的^1^5N同位素取代物4000~75cm^-^1的红外光谱。

关键词 红外分光光度法 芳香族烃 结构分析 肟 化学键 化学位移 过渡金属络合物 氮同位素

分类号 0657 0627

^1^5N isotope shifted IR spectra and structure study of arylhydroxyoximes and their transition metal complexes

NIE CHONGSHI,CHEN YAOHUAN,ZHOU CHENGMING,ZENG MINGYING,SHENG HUAIYU

Abstract The IR spectra (75-4000) cm-1) of 5 arylhydroxyoximes and their transition metal complexes as well as their corresponding 1kN isotope analogs were measured. According to the 15N isotope shifted bands, the characteristic nC:N and n:N-O frequencies of the oximes and their metal complexes are assigned to a medium strong band in 1640~1610 cm-1 region and near 1000 cm-1 resp. In low frequency region, a weak band showing small 1kN isotope shift in 380~330 cm-1 is assigned to metal-ligand M-N, coordination bond stretching mode absorption for the complexes. Using 63Cu and 65Cu isotope shifts, a medium strong band in 270~220 cm-1 region was tentatively assigned to nM-O mode absorption. For HAP coordinated with different metals, the nOH and n-N-O frequencies of the complexes increase and slightly decrease resp. according to the sequence: Fe2+, Co2+, Cu2+, Ni2+. The sequence is in consistent with the radius of the metal ions and the reported relative mol. ion peak heights of their electroionization mass spectra.

Key words INFRARED SPECTROPHOTOMETRY AROMATIC HYDROCARBON STRUCTURAL ANALYSIS OXIME CHEMICAL BONDS CHEMICAL SHIFT TRANSITION METAL COMPLEX NITROGEN ISOTOPES

DOI:

通讯作者