Coordination Isomers of Thiourea Ligands
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Introduction

Previous work on the coordination of thiourea ligands to cobalt(III) has suggested that two coordination isomers are formed. In this work, we report on the successful separation and characterization of two coordination isomers of cobalt(III) complexes for a series of thiourea ligands. The complexes are separated using column chromatography. Characterization has been by NMR. What isomer is formed depends on the electron withdrawing of electron donating properties of the thiourea ligand.

H-1 and C-13 NMR of the Ligand

Separation of Isomers
Column Chromatography

Distribution of Isomers

Conclusions

1. The coordination of unsymmetrical thiourea ligands depends on the electron donating ability of the substituted phenyl group.
2. The blue isomer is favored when X is a good electron withdrawing group such as nitro. When X is a good electron donating group such as methoxy, the red isomer is favored.
3. These isomers can be separated using column chromatography and characterized by using NMR.