

Labile Complexes

by Murray Davies

Experiment Overview

This is the introductory transition metal chemistry experiment given to second year students doing inorganic chemistry at James Cook University. The experiment examines the preparation of three labile transition metal complexes and examination of some properties like solubility and reactivity in acid or base.

The students are asked to observe the behaviour of the complex under these conditions and give a plausible explanation (using chemical equations) for their observations.

Level of Experiment

Second year introductory inorganic chemistry

Keyword Descriptions of the Experiment

Domain

inorganic chemistry

Specific Descriptors

transition metal chemistry, lability, chemical properties, solubility, acid / base properties

Course Context and Prerequisite Knowledge and Skills

This is the first experiment students do in second year inorganic chemistry. They receive little transition metal chemistry in first year. It introduces the student to:

- ☐ preparation of coordination complexes; and,
- ☐ observation of their solubilities and chemical behaviour.

The students are required to explain their observations in chemical terms. Students will undertake the experiment while they are learning about coordination compounds. The experimental is relatively straightforward requiring no specialised apparatus or skills.

Time Required to Complete

Prior to Lab: N/A

In Laboratory: 3-5 h (usually completed in one 5 h laboratory session)

After Laboratory: 2 h (determining reactions and balancing equations)

Experiment History

This is a shortened version of a practical from the University of Adelaide that Richard Keene has modified over time.