01
FE(III)-OXALATE COMPLEX

SYNTHESIS AND PURIFICATION

CHEMISTRY 136L // FALL 2019

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BRIEF OVERVIEW OF PROCEDURE

Synthesis from two aqueous solutions

$FeCl_3$ (*aq*, YELLOW) + $K_2C_2O_4$ (*aq*, COLORLESS)

Mix two aqueous solutions

↓

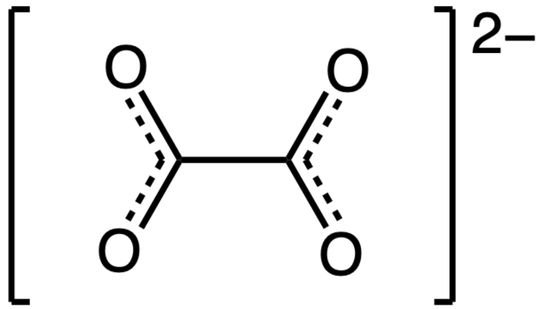
Cool in ice to crystallize desired product

↓

Expected product = $Fe_2(C_2O_4)_3$

mole ratio Fe(III):$C_2O_4^{2-}$ = 2:3

THE OXALATE LIGAND



Oxalate is an anionic bidentate ligand

It is a Lewis base

Recall

Brønsted-Lowry acid	→	proton (H^+) donor
Lewis acid	→	electron (e^-) acceptor

BRIEF OVERVIEW OF PROCEDURE

Recrystallization from water

$FeCl_3$ (*aq*, YELLOW) + $K_2C_2O_4$ (*aq*, COLORLESS)

Mix two aqueous solutions

↓

Cool in ice to crystallize desired product

↓

Expected product = $Fe_2(C_2O_4)_3$

mole ratio Fe(III):$C_2O_4^{2-}$ = 2:3

↓

To purify: *recrystallize* from water

↓

Product is soluble in water, so use minimum amount of water

PERCENT YIELD

How much product did you make?

$$\text{Percent Yield} = \frac{\text{Actual Yield}}{\text{Expected Yield}} \times 100$$

To figure out the expected yield:

Figure out number of moles of each reactant

Use stoichiometry to determine limiting reactant

Use the limiting reactant and stoichiometry to determine expected amount of product

Notes

- Work independently
- Recrystallization is challenging, so have patience
- Clean up solid spills (pan + brush)
- Clean up station before you leave
- Check with me before leaving lab