

WELCOME & EXPERIMENT 1

Synthesis and Analysis of an Fe(III)-Oxalate Complex

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CHEMISTRY 136L

YALE UNIVERSITY

FALL 2018

TWO REACTANTS

FeCl_3
(aq, **YELLOW**)

+

$\text{K}_2\text{C}_2\text{O}_4$
(aq, **COLORLESS**)

Mix the two aqueous solutions

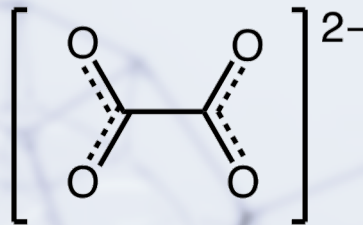


Cool in ice to crystallize the desired product



Expected product: $\text{Fe}_2(\text{C}_2\text{O}_4)_3$
(mole ratio Fe(III): $\text{C}_2\text{O}_4 = 2:3$)

OXALATE



Oxalate is an anionic bidentate ligand

It is a Lewis base

BRØNSTED-LOWRY ACID → proton donor
LEWIS ACID → electron acceptor

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To purify, recrystallize from water




Product is fairly soluble in water!
USE MINIMUM AMOUNT OF WATER

TO FIND OUT EXPECTED YIELD

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

1. Need to know the moles of the two reactants used
2. Use stoichiometry to figure out the limiting reactant
3. Use the limiting reactant and stoichiometry to determine how much product can be expected



WORK INDEPENDENTLY
RECRYSTALLIZATION IS CHALLENGING
HAVE PATIENCE
CLEAN UP SOLID SPILLS
CLEAN UP BEFORE YOU LEAVE
CHECK WITH ME BEFORE YOU LEAVE

NOTES

1. Lab safety & requirements + lab coat
2. Manual, lab notebook, calculator, pen
3. Prelab material in lab notebook (identification info & purpose in present or future tense). In the lab, brief procedure in past tense. Then observations and/or measurements.
4. Lab report – none due for Expt. 1
5. **QUIZZES – SPREAD OUT + USE PEN + STAY BACK**
6. Need help?
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