

Reactions of PPh₃ with elements

Video playlist on YouTube:

https://www.youtube.com/playlist?list=PLJb-VFt_wYH4tCqTfJm3KW6OAW8nckml

Each group has a total of 4 videos to watch. Watch the videos corresponding to your assigned element, and then everyone watches the two videos “MP of PPh₃ products” and “I₂ in DCM.”

Week 1: reaction of PPh₃ with elements

1) brief prelab lecture/intro to the experiment over zoom. This is an exploratory laboratory and I do not want you to do any literature research to try to determine what your product is. Your data should inform you.

2) Each team will observe one of three reactions: the reaction of PPh₃ with either elemental bromine, sulfur, or selenium. Based on the video, decide which characterization methods you want to determine the identity and purity of the product, choosing from NMR, IR, MS and UV-Vis. Based on a complete analysis of the data, determine the structure of your product.

group 1: Br₂

group 2: S

group 3: Se

Week 2: reaction of PPh₃ with elements

3) These products each react with elemental iodine to form a new product. Again, based on the video, decide which characterization methods you want to determine the identity and purity of the product, choosing from NMR, IR, MS and UV-Vis. Based on a complete analysis of the data, determine the structure of your product.

group 1: Br₂

group 2: S

group 3: Se

Week 3: group presentation on your synthesis and characterization

Week 4: additional data, and additional interpretation instructions

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Your writeup for this experiment is in three parts.

Writeup 1: based on your data and analysis, propose structures for your two products. Fully assign the data. It may be that you are unable to completely determine the structure and determine identity and/or purity at this point. That is ok. Your first writeup is due on Friday March 26th.

Presentations: Each group will give a short presentation outlining their proposed structure during class the week of March 29.

Writeup 2: you will be given a complete dataset for your molecules. Based on the presentations, the complete data, you will write a more formal report discussing the synthesis, characterization of all 6 product. This report is due during the last week of class (May 7).