Reaction of Zinc and Sulfur

Ka-POOF!

Chemicals and Equipment Needed

- Zinc/Sulfur reaction Kit – **O4**
  - Vials of Zn, S, and mixtures of Zn/S
  - Ceramic mat (or get from **U4**)
- Bunsen burner - **T**
- Ringstand with iron ring
- Deflagrating spoon – **U2**
- Matches – **U1**
- Kaydry or paper towels

Preparation

- Adjust the iron ring so that when you place the deflagrating spoon across it, the handle of the spoon will be in the hottest part of the burner's flame.
- On delivery, set up ringstand and spoon, and pour the contents of the **mixed vial** onto the ceramic mat.
  - Don't leave the kit with the instructor.

Presentation

- Turn on the exhaust fan. Light the burner and start heating the spoon handle.
- When it gets red-hot, carefully grab the spoon end and, holding it at arm's length, lay the hot handle in the pile of Zn and S. After a few seconds…POOF!

Discussion

- The presumed reaction is:

  $Zn\ (s) + S\ (s) \rightarrow ZnS\ (s)$

  or $8\ Zn\ (s) + S_8\ (s) \rightarrow 8\ ZnS\ (s)$

Clean-Up

- The ZnS and ZnO splatters all over the benchtop. Use a dry Kaydry or paper towel to wipe the residue into the kit box, then use a wet towel to get the remaining residue. Scrape any residue off the ceramic mats into the box as well. Dispose of the solid ZnO and ZnS in the "ZnS/FeS" jar in the hood. The wet paper towels can be thrown away.
- Dispose of the ceramic mat when it gets gross.

NOTES:

Refill the vials as needed.

- There are labels on each vial showing how far to fill it (3g for Zn, 0.5g for S)
- There are additional vials that should be used to mix the elements (Zn/S)

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AMM