Parr 1241 Oxygen Bomb Calorimeter

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Introduction & Theory

1. Overview of Instrumentation Program
    1. Purpose
    2. *Workshops:* Two for calorimeter, intro and "test".
    3. Schedule online (and purpose of schedule)
    4. Reporting issues online
2. **Calorimetry**: Science of measuring quantities of heat gained or lost by a physiochemical system
    1. Heat of combustion (E/g, E/mol, E/L), specific heat, etc.
    2. Structure of calorimeter: jacket, bucket, bomb, temperature probe, water, fuse, stirrer
3. Result from calorimeter is *gross* heat of combustion (includes water vapor, wire, calorimeter) [E/g]
    1. Wire heat of combustion is **1400 cal/g or 5862 J/g**.
    2. Bezoic acid heat of combustion is **26.454 MJ/kg**.

Using the Calorimeter

1. N2 present will be oxidized to nitric acid, sulfur to sulfuric acid, which can affect measurements
2. Water vapor can condense, which will affect measurements
3. Bomb can withstand 200 atm, reactions can be > 100 atm with pressures starting at 30 atm
4. Bomb is made of high Cr-Ni alloy to withstand etching