Characterization of Acids and Bases

In the last three weeks of lab we will explore three classes of chemical reactions that form the basis of much of your laboratory work this semester: acid/base reactions, oxidation/reduction reactions, and metal-ligand complexation reactions. This week you and a partner will work to identify compounds as acids or bases, to examine the relationship between an acid's or a base's structure and its chemical reactivity, and to consider the difference between an acid's or a base's capacity to react and its strength as a proton donor or proton acceptor.

Pre-lab Assignment

Review reading assignments from textbook on acid-base chemistry.

Preliminary Tests

Obtain approximately 5 mL each of the six stock solutions identified as A, B, C, D, E, and F, placing each in a separate clean test tube. Complete the following preliminary tests on these solutions, recording your observations in your laboratory notebook.

Preliminary Test 1: Transfer approximately 10 drops of solution A into each of two test tubes. Add one drop of bromothymol blue to one test tube and one drop of phenolphthalein to the other test tube. Record your observations in your lab notebook. Repeat for each of the remaining stock solutions.

Preliminary Test 2: Divide the remaining portion of solution A into two test tubes. Add a small piece of Mg to the first test tube and add five drops of 1 M $Mg(NO_3)_2$ to the second test tube. Record your observations in your lab notebook. Repeat for each of the remaining stock solutions.

Based on how each solution reacts in these preliminary tests, divide the six stock solutions into two groups. In the space below, identify by letter the solutions you placed in each group and explain the reason(s) for your assignments. Check your assignments with the instructor.