

What is Analytical Chemistry?

- Focused on developing and improving approaches to answer two main questions:
 1. What is present in a sample?
 - Qualitative Analysis
 2. How much of something is present in a sample?
 - Quantitative Analysis
- Analytical Chemistry is a component of all chemical disciplines!
- Distinguishing between *Analytical Chemistry* and *Chemical Analysis*

The Analytical Process: “The Big Picture”



From: David Harvey: Analytical Chemistry 2.0, An Electronic Textbook for Introductory Courses in Analytical Chemistry. Available at http://www.asdlib.org/onlineArticles/ecourseware/Analytical%20Chemistry%202.0/Text_Files.html

Options for Analysis

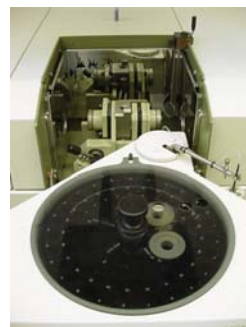
- **Quantitative versus qualitative**
- **Classical or “Wet” methods**
 - Gravimetric Analysis
 - Titrimetric or Volumetric Analysis
- **Instrumental Methods**



The Analytical Chemist's Toolkit

Instrumental Methods

- **Spectroscopy**
 - Interaction with “light”
- **Chromatography**
 - Separations
- **Mass Spectrometry**
 - Methods that respond to “mass”
- **Electrochemistry**
 - Electron-transfer processes
- **Several other “hybrid” classes or subsets**



Our Focus...

- **How do we ensure that a measurement is reliable and give meaningful information?**
- **Problem-solving**
 - Equilibrium, Equilibrium, Equilibrium
 - Why?
- **Lab-skills development**
 - You need to be able to trust yourself!
- **Introduction to basic instrumental methods**