

# WHAT IS ANALYTICAL CHEMISTRY?

CHEM 25 | SDSU

# ANALYTICAL CHEMISTRY

- Analytical chemistry is distinct and different from chemical analysis.
- **Chemical analysis** is concerned solely with the qualitative and quantitative analysis of matter.
- Though **analytical chemistry** is also concerned with the above analysis, analytical chemistry is also concerned with improving, modifying, or otherwise exploring how analysis techniques can be applied.
- Analytical chemistry can best be understood as a perspective, or a way of thinking about solving complex problems.

# ANALYTICAL APPROACH TO PROBLEM SOLVING

## Step 1. Identify and Define Problem

What is the problem's context?  
What type of information is needed?

## Step 5. Propose Solution to Problem

Is the answer sufficient?  
Does answer suggest a new problem?

## Step 2. Design Experimental Procedure

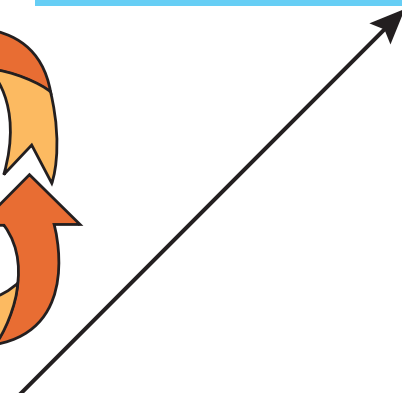
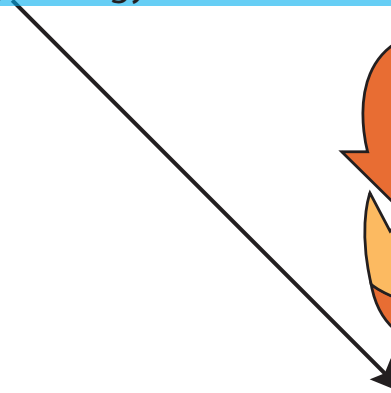
Establish design criteria.  
Identify potential interferences.  
Establish validation criteria.  
Select analytical method.  
Establish sampling strategy.

## Step 4. Analyze Experimental Data

Reduce and transform data.  
Complete statistical analysis.  
Verify results.  
Interpret results.

## Step 3. Conduct Experiment & Gather Data

Calibrate instruments and equipment.  
Standardize reagents.  
Gather data.



# IMPROVING NICKEL ANALYSIS

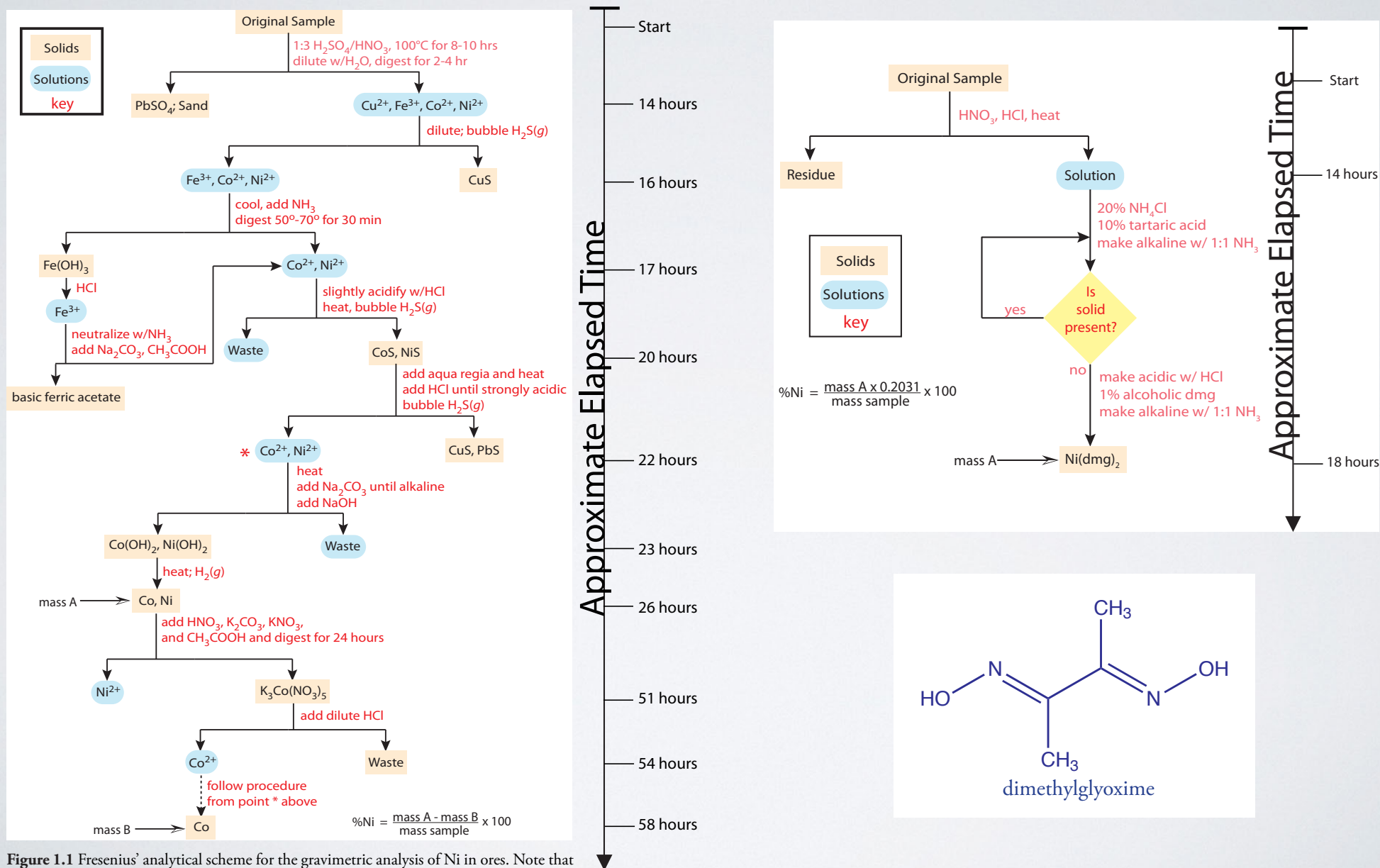


Figure 1.1 Fresenius' analytical scheme for the gravimetric analysis of Ni in ores. Note that