

Background: So we are in the second week of our chemical journey together, and we've seen some interesting things. Who knew that you could measure so many things in the natural world? I don't want you to get the idea that chemists sit around and convert units all day, our lives aren't that dull. Most chemists get really excited about *stuff*. We love *stuff*, what its made of and what it can do.

When you get right down to it, all the stuff you'll ever see is made up just 118 different kinds of atoms, which are laid out on the periodic table of the elements. Lots of people love their families and puppies. I love the period table.

The idea that stuff is made of stuff as unique, indivisible, and nearly invisible as atoms is actually quite profound. Humanity knew more about the motion of the moon and the stars because they could actually be seen. All of our knowledge about atoms had to be inferred from what we could learn about matter, and that was no small task.

Atoms are great, but there are only 118 of them and 14 or so of them only exist for fractions of a second. When atoms combine to make compounds a new set of properties can emerge. Similarly when compounds are mixed another set of properties can emerge. This goes on and on until you eventually start to wonder, "what is that made of?"

We are also going to start classifying matter. It turns out that when you refer to various substances there are right and wrong ways to do it. Referring to something like chalk as an element would cause all kinds of confusion at the Chemistry Cocktail Party.

Objectives:

1. Differentiate between elements and compounds.
2. Discern between mixtures and pure substances.
3. Classify mixtures based on their composition.
4. Describe methods for separating mixtures in various phases (solid, liquid, gas).

Reading: Zumdahl – Chapter 3