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## EXPLORING SODIUM POLYACRYLATE

### Learning Objectives

1. Familiarize ourselves with a polymer we've all likely used: Sodium Polyacrylate.
2. Investigate how a diaper works.

### Vocabulary

1. **Polymer** -- Derived from the Greek words for "many" and "part". A polymer is a large molecule made of repeating smaller molecules, called monomers, that are linked together in a chain-like structure. They exist naturally, and we can also make them artificially. Your DNA and many other molecules in your body are polymers, and so are almost all human-made materials! In fact, all plastics are polymers.
2. **Sodium Polyacrylate (SPA)** -- The scientific name of a common artificial polymer found in products around the globe; Also referred to as *Waterlock* or *Super Absorbent Polymer (SAP)*.
3. **Mass** -- Mass and weight both refer to how heavy something is. Weight is related to gravity's pull, so it can change depending on where you are in the universe (a bowling ball weighs less on the moon, because there's less gravity!). Mass, however, stays the same unless something is added or taken away - and is a more accurate term to use in most experiments.
4. **Hydrophilic** -- Something that is hydrophilic "loves" water. This means that the molecules it is made of are attracted to water molecules, and the two materials bond together when they come in contact with one another. (Whereas *hydrophobic* materials will repel water and stay dry.)

### Pre-Activity

Gather: Disposable diaper, Plastic cups or other plastic containers, water, salt, food coloring

### Post-Activity and Resources

1. [You can also use the Sodium Polyacrylate from diapers to make "fake snow"!](#)
2. <https://www.acs.org/content/acs/en/education/whatischemistry/adventures-in-chemistry/experiments/diapers.html> (For more chemistry info)
3. Do you think the chemical change that we witnessed with Sodium Polyacrylate and water would happen differently if the water was hot or cold? Try it!
4. Can you think of materials that don't absorb water?
  - a. Test different clothes for absorption!
  - b. If you get an athletic jersey and a t-shirt wet at the same time, which do you think will dry first? Can you guess why!?



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