Gummy Shapes

How can things build themselves?

Description

In this activity, kids use chemistry to "self-assemble" gummy shapes.

Suitable for kids ages 3 and up.

Materials

Sodium alginate worm kit
Mesh strainer
Bowl that holds the strainer
Plate
Spoon

Note: *Sodium alginate worm kits are inexpensive and available from educational science stores, such as stevespanglerscience.com (#WORM-700) and teachersource.com (#CK-600). It's extra fun to make worms in two different colors!*

Time

Preparation: 5 minutes
Activity: 15 minutes or longer
Cleanup: 10 minutes

Safety

Do not eat or drink any of the materials used for this activity. Supervise children at all times.

Step 1

Grown-ups, get everything ready!

Follow the kit instructions to prepare the worm ingredients.

Place the strainer in the bowl with the salt water.

TIP Not all kits indicate their ingredients. The gooey stuff is sodium alginate. The salt water is calcium chloride solution (often made from mixing crystals with water).

Step 2

Kids, time to get gooey! Squeeze the bottle of goo into the bowl of salty water.

Drip it gently to make little droplets. You can also squeeze harder to make long worms.

TIP Make sure you squeeze the goo into the strainer.

Step 3

Lift the strainer out of the bowl. Dump the contents onto the plate.

Feel the goo. Is it still liquid?

Try squeezing it. What happens?

What's going on?

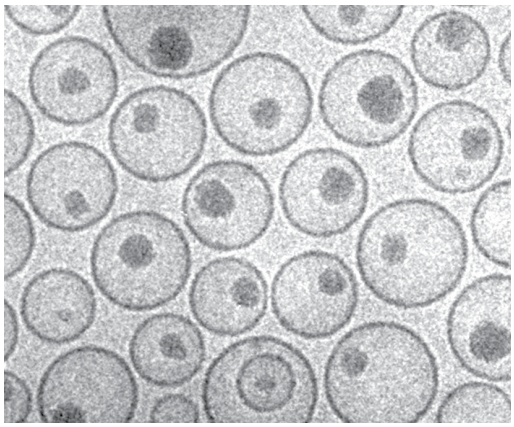
When the liquid goo comes into contact with the salt water, a chemical reaction takes place and creates a *polymer*. A polymer is a long chain-like molecule, made up of many repeating units linked together.

The polymer forms on the outside surface of the goo, where it touches the salt water, creating a shell around the liquid interior.

How is this nano?

The polymer droplets you made are similar to *nanocapsules*, tiny particles with an outside shell and hollow interior that can be filled. Nanocapsules are very, very small—a nanometer is a billionth of a meter.

To create tiny, nano-sized technologies, scientists can use a process called *self-assembly*, in which tiny things actually assemble themselves!



Nanocapsules with cancer medication

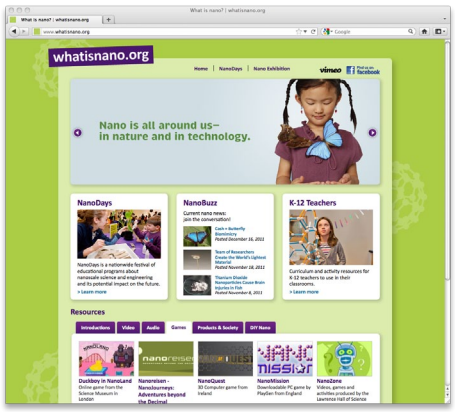
Nanomedicine

Nanotechnology takes advantage of the way things behave differently at the nanoscale to make new products and applications.

For example, nanocapsules can be designed to deliver medicine to diseased parts of the body, bypassing healthy parts. They can use much less medicine, so they can have fewer and less harmful side effects.

Learn more

Learn more at:
www.whatisnano.org



Credits

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This activity was adapted from Sweet Self-Assembly, developed by the Children's Museum of Houston for the NISE Network.
Activity photographs, Gary Hodges Photography
Image of nanocapsules courtesy Katarina Edwards, Uppsala University.
Image of doctor, www.istockphoto.com