

Smelly Balloons

AGE RANGE: Age 3 and older • PREP TIME: 5 minutes • LEARNING TIME: 15 minutes

How small is nano?

In this activity you'll put scents in balloons and see if you can smell them through the balloon membrane. Scent molecules can sneak through the skin of a balloon - that's small. This worksheet is adapted from The National Informal STEM Education Network (NISE Network) which is a community of informal educators and scientists supporting learning about science, technology, engineering, and math (STEM) across the United States. On the web at www.nisenet.org

Instructions

Gather the following items:

- Round balloons in a variety of different colors
- Several different scented extracts (such as vanilla)
- Medicine dropper (optional)
- Hand pump for inflating balloons (optional)

1. Put about a half teaspoon of extract in each balloon, by pouring carefully or using a medicine dropper. Use a different color balloon for each kind of extract.
2. Blow up the balloons and tie them securely. Give them a shake.
3. Now, investigate the balloons! Smell the balloons. Can you figure out which scent is hidden in each balloon?



Safety First

Use normal precautions while doing this activity. Popped balloons can present a choking hazard to young children. Supervise children at all times.



Many balloons are made of latex. This activity is not suitable for individuals who are sensitive or allergic to latex.

What is happening?

Tiny scent molecules are leaking out of the balloons. They're too small to see, but you can smell them! Your sense of smell works by identifying the shape of scent molecules. Molecules are made of particles called atoms that bond together. Everything in the world is made of atoms, including the balloon you're holding and the scented air inside it.

So if you can smell, your nose is your very own nano-detector!



What is nano?

A nanometer is a billionth of a meter. That's really tiny! Nanometers are used to measure things that are too small to see, like atoms and molecules, the basic building blocks of our world.

Nanoscale science focuses on things that are measured in nanometers. In the field of nanotechnology, scientists and engineers make new materials and tiny devices. Nanotechnology allows them to make things like smaller, faster computer chips and new medicines to treat diseases like cancer.

Nanotechnologies include new materials and tiny devices so small they're sometimes built from individual atoms and molecules!

Nanotechnology takes advantage of special properties at the nanoscale to create new materials and devices.

More at <https://www.nisenet.org/whatisnano>

This activity was adapted from "Odors Aloft," in No Hassle Messy Science with a Wow: Chemistry in the K-8 Classroom, published by the Oregon Museum of Science and Industry, 1998 and 2007.

Text published under an Attribution-NonCommercial-ShareAlike Creative Commons License. <http://creativecommons.org/licenses/by-nc-sa/3.0/us/>

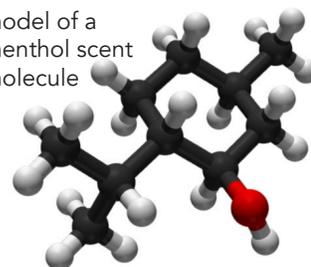
Menthol molecule: wikipedia/public domain

Activity photographs, Gary Hodges Photography, April Smith

How is this "nano"?

Scent molecules are so small that they can travel through the outside of the balloon. In fact, they're so tiny that they're measured in nanometers! A nanometer is a billionth of a meter.

model of a menthol scent molecule



Atoms and molecules

Nanotechnologies include new materials and tiny devices—so small they are sometimes built from individual atoms and molecules!

Researchers are creating nano-sized sensors that can sniff out very small amounts of chemicals in the air. Some of them work the way your nose does, by detecting the different shapes of molecules.



Check out our Science at Home section on the website.



TRAIL SPONSORS

