Mystery Shapes

Can you see by feeling?

Description

In this activity, kids describe an object they can't see!

Suitable for kids ages 3 and up.

Materials

Pillow case
(or other opaque sack-like bag)

Assorted small objects
(such a letter blocks, rubber balls, small plastic animals or toys)

Paper
(you can use the print out provided)

Pens or pencils

Bandana or eye-mask (optional)

Note: *Online craft stores sell ready-made assortments of different plastic shapes.*

Time

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

Safety

Use normal precautions while doing this activity. Avoid objects that may be a choking hazard.

Step 1

Grown-ups, get everything ready!

Pick out a few objects and place them in the pillowcase, but be sure to keep the other objects out of sight.

Step 2

Kids, investigate the hidden objects!

Without looking, put your hands into the pillowcase. What do your feel?

Draw a picture or use detailed words to describe what you feel inside the bag.

Step 3

Compare! Now, take the object out of the bag and compare it to your picture. What information does your drawing include? What's missing?

What's going on?

When you feel a mystery shape in the box and draw an image of what it looks like, you're modeling the way that a special tool called a scanning probe microscope (SPM) works. Your hand is acting like the sensing part of the SPM, while your brain acts like the computer program that creates a picture of what the tool "feels."

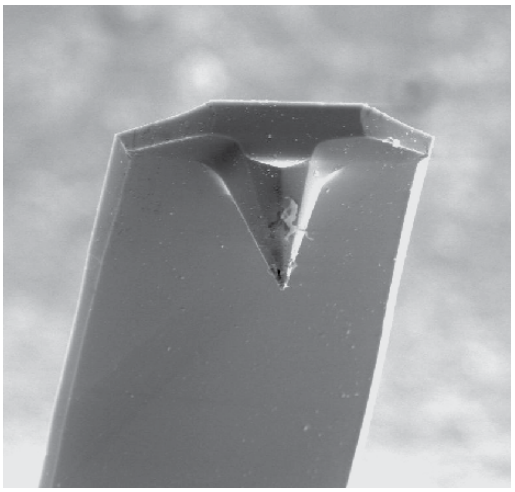
SPMs let us make images of tiny, nano-sized things like atoms that are much too small to see, even with powerful light microscopes.

Researcher using an SPM

How is this nano?

Scientists use special tools and equipment to work on the nanoscale. Scanning probe microscopes (SPMs) allow researchers to detect and make images of objects measured in nanometers—or even smaller.

A nanometer is a billionth of a meter. That's really, really small.



The tip of an SPM

Scanning Probe Microscopes

The invention of SPMs was a great breakthrough in the field of nanotechnology.

Once scientists could make pictures of things as small as individual atoms, they could begin to manipulate and study things at this super-tiny scale. Without SPMs, nanotechnology wouldn't be where it is today!

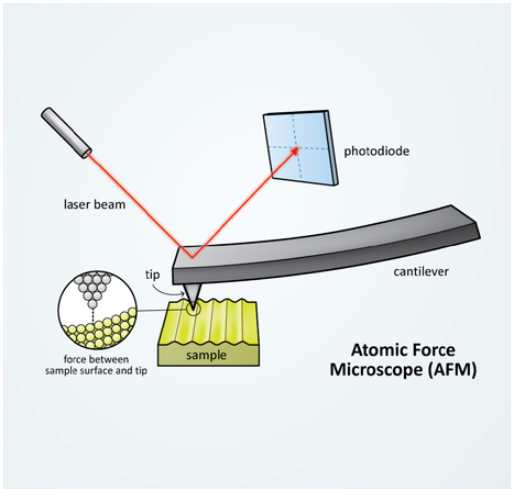
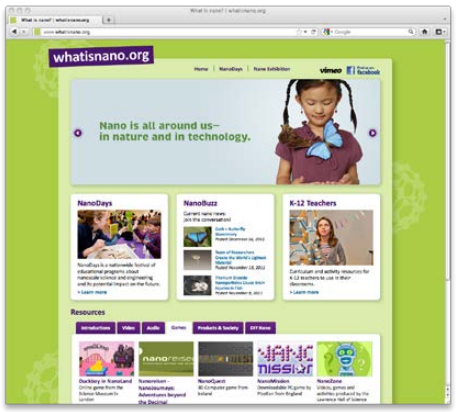


Illustration of AFM

Learn more

Learn more at:

www.whatisnano.org



Credits

This project was supported by the National Science Foundation under Award No. ESI-0532536. Any opinions, findings, and conclusions or recommendations expressed in this program are those of the author and do not necessarily reflect the views of the Foundation.

Activity photographs: Emily Maletz / NISE Network
Researcher: Charles Harrington Photography, Cornell NanoScale Science & Technology Facility Cleanroom
AFM tip: SecretDisc
AFM illustration: Emily Maletz / NISE Network