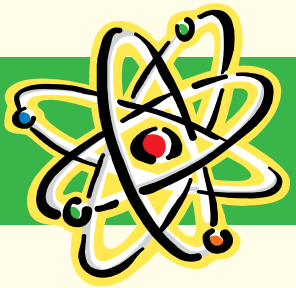
Nanotechnology

Too BIG to Ignore



Let's Get Our Hands 'Nano Dirty'!

Nanotechnology is influencing our lives in all fronts, from cooking to outdoors… to medical treatment. Nanotechnology is a revolution that is changing our world! This article lists a couple hands on activities to understand nanoscience and technology. The activities proposed are best done in group settings. Adult supervision is needed during each activity.

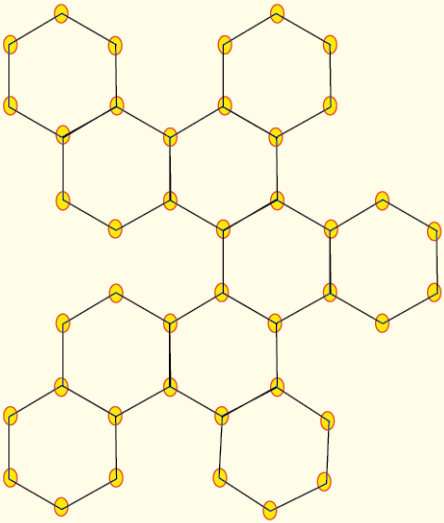
Feeling Nano: It is difficult to imagine how small a nanometer is. Nano means ten to the power of negative nine (10^{-9}). So, what does that really mean? To have a feel how small 1nm is, it is pertinent to say that a human hair is typically 70,000 nm. Let's try an 'experiment'.

Take two sheets of construction paper. Select contrasting colors. Measure the length and width of one of the sheets (Paper 1) and record the readings in a notebook. Use a ruler that can measure millimeters (mm). Now, use a pair of scissors to cut the other sheet of paper into very small pieces. The smaller the better. How small can you go? Keep cutting until it is impossible to make them any smaller! Now select the smallest piece (Paper 2) and put it on Paper 1. How small does Paper 2 look as compared to Paper 1?

Now measure Paper 2 (length and width) and try to calculate how small Paper 2 is as compared to Paper 1. How small will you have to cut Paper 2 to make it nano-sized relative to paper 1? To find out the answer divide the area of Paper 2 (A2) by area of Paper 1 (A1). Play with the numbers (length and width of Paper 2) to get A2 ÷ A1 = about 10^{-9}.

Start Your Own Buckyball Business!: Fullerenes are made of carbon and consist of a spherical, ellipsoid, or cylindrical arrangement of dozens of carbon atoms. A spherical fullerene is like a soccer ball and, so, they are often called "buckyballs." We can make models of buckyballs at home or school.

Make shapes like one shown to the left with marshmallows ( ) and toothpicks (——) and make a buckyball out of it. Obtaining the final ball shape will be tricky! Some marshmallows will have to be removed now! One joint can have only one marshmallow!!



If you would like more Nano activities and instructions, please email: nie@forumcomm.com or visit: www.nanooze.org or www.nanokids.rice.edu.

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Buckyball Diagram

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