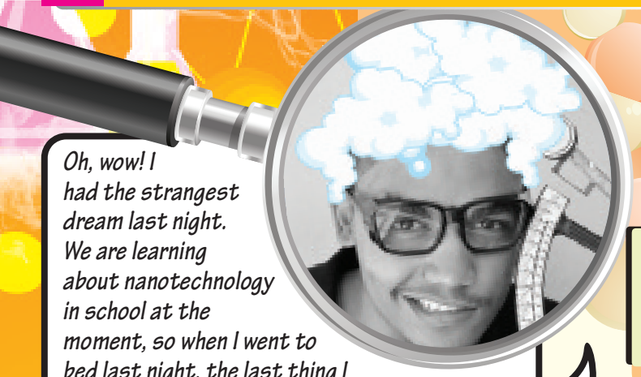
EASY SCIENCE

NANOTECHNOLOGY PUBLIC ENGAGEMENT

Kyle meets Nanoza!

By Helene Shere

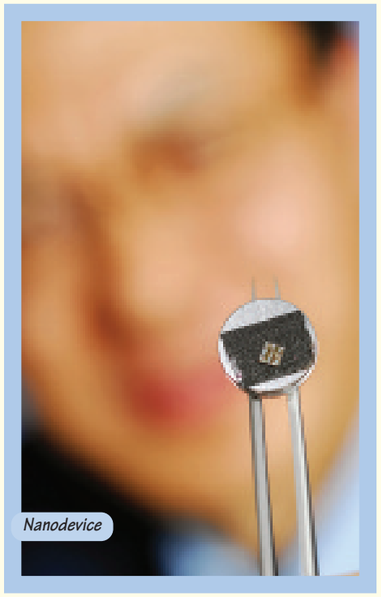


Oh, wow! I had the strangest dream last night. We are learning about nanotechnology in school at the moment, so when I went to bed last night, the last thing I thought about, was how small 'nano' really is? The prefix 'nano' means one billionth. So, one nanosecond is one billionth of a second and one nanometre is one billionth of a metre. That is really very small, especially since a single strand of human hair is about 80 000 nanometres thick!

Suddenly, in my dream, I was in another world. Everything looked so big, because I was so small. I met a little man, named Nanoza, who was made up of carbon, hydrogen and oxygen atoms. I was very scared, but when he welcomed me into the world of nanotechnology, I felt right at home. He took me on a tour into his world and gave me some very useful information.

A future with nanotechnology

"Nanoscience is the study of the small so that it can affect the large," Nanoza said. One of the goals of nanotechnology is to control single atoms. In other words, nanoscientsts want to create tiny structures – atom by atom – that have specific features and functions. Eventually, nanotechnology could touch every part of our lives. Here are some examples of future devices that could be created using nanotechnology:



Nanodevice

- **Supercomputers the size of your cell phone.**
- **Nanodevices that could go inside the body and deliver medicine exactly where it needs to be.**
- **Nanoscale coatings on glass, which could help turn the sun's energy into electricity.**
- **Material that can't stain or wrinkle and doesn't get wet.**

Supercomputers

Nanoscale glass coating

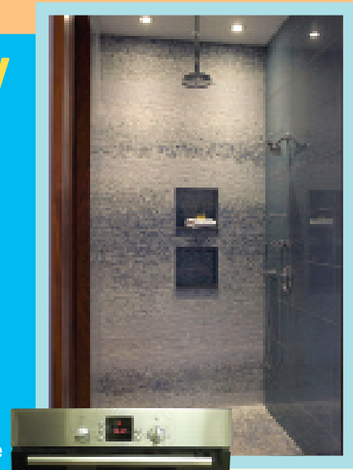
The U.S Navy is even using nanotechnology coatings on their submarines to keep sea creatures off it.

Nanotechnology at home

Nanoza also showed me that we use nanotechnology every day in the kitchen and in the bathroom. Just think how wonderful it would be if:

- **The sink in the kitchen was self-cleaning?**
- **The outside of an oven was heat resistant?**
- **The shower was resistant to mildew?**
- **The fridge could kill bacteria?**

Well, it could be!!! All of the above materials are already available, thanks to nanotechnology.



How does it work?

One of the new nanomaterials is aerogels, which are super lightweight materials, known as 'frozen smoke'. This substance can be used in insulating fridges, windows and walls.

Another nanotechnology term is 'solid refrigeration'. Here, scientists use tiny pumps that circulate a non-poisonous metal liquid, through the fridge. This will mean smaller refrigerators in the kitchen, which means more space.

Even the lights in the kitchen can be improved. Nanotechology could lead to highly efficient next-generation LEDs (Light Emitting Diodes). These lights are so special, that they can be placed into plastic tubes and this saves electricity.

LED Lights

There's more!

Take a look at these future developments that Nanoza explained to me:

- 'Metal rubber' is a substance that is as strong as a metal, but as flexible as rubber.
- Substances that can change colour when you want them to.

With all these changes and new technologies, we might have kitchens like the Jetsons soon.

Nanoza took me for an ice-cream and even here I saw something amazing. Nanotechnology can be used to prevent people from getting food poisoning. They have made a spray that can be used on kitchen counters and surfaces. This new spray will then kill microbes (small viruses and bacteria).

I learnt so much from Nanoza, that I didn't want to wake up!

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I am so excited about all the chemistry in the kitchen that I have decided to do some activities. Since 2011 is the International Year of Chemistry, why don't you try them too?

DIY SCIENCE

Make your own soap!

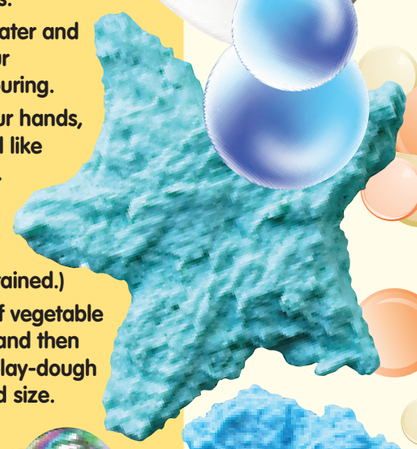
What everyday item do we use in the kitchen, as well as in the bathroom? Soap! Here is a fun way to make your own soap.

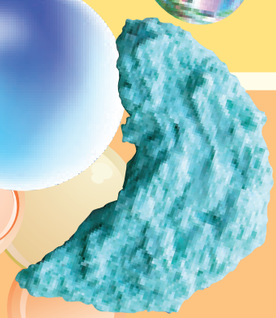
You will need:

- Three cups of soap flakes
- Liquid food colouring
- Vegetable oil
- Water
- A bowl

Steps to follow:

1. Make your soap flakes. This is very easy to do. Simply take some of Mom's small soap bars (just remember to ask her which ones she no longer needs first) and grate them into a bowl, to form soap flakes.
2. Add ½ a cup of water and a few drops of your favourite food colouring.
3. Mix well, using your hands, until it starts to feel like foamy play dough. (You can wear rubber gloves to make sure your fingers don't get stained.)
4. Rub a few drops of vegetable oil on your hands and then shape your soap play-dough into any shape and size.
5. Let the soap stand overnight and then use it!





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