NANOTECHNOLOGY

In the Chemistry High School Curriculum
MAINE EAST HS
PARK RIDGE, IL

Tina Sabatello
Chemistry
Since 1992

Chemistry BS, MS
UIC
NANOTECH
IT'S GOING TO BE BIG
INNOVATION
HOW SMOOTH IS SMOOTH?

• Analysis of Atomic Force Microscope (AFM) Calibration Standard
AFM ANALYSIS OF CD / DVD
REMOTE ACCESS: AFM CD/DVD ANALYSIS
POLAR - NONPOLAR

http://youtu.be/obhVlONjZ14
• A silver-coated copper surface is prepared with silver nitrate

• Create Self-assembled monolayer with non-polar molecular segments at the upper surface
  • dip in a 1 mM heptadecafluoro-1-decanethiol (HDFT) solution.

• The polar end of the (HDFT) molecules form chemical bonds with the silver nanoparticle surface, which holds the molecule on the substrate.
SEM ANALYSIS OF HYDROPHOBIC SURFACE
Online Lab Materials

The Nano-CEMMS Center provides a variety of teaching modules for K-12 Classrooms. Click on a thumbnail below to load more information about our materials.

3D Printing

This lab uses a process based on a research project headed by Professor Nicholas Fang and developed at the Nano-CEMMS center at the University of Illinois. Dr. Fang's research group is using a UV sensitive monomer to do a form of three-dimensional printing called microstereo lithography. Using a video projector with a UV output, they are able to create incredibly thin polymer layers (on the order of 400 nm) and build objects layer by layer. This activity uses the same principle but at a much larger scale. This activity demonstrates the basic challenges of nanoscale engineering and manufacturing.
PHYSICAL / CHEMICAL PROPERTIES

• Nanoscale Chemical-Electrical-Mechanical Manufacturing Systems (Nano-CEMMS)

• Joe Muskin at jmuskin@illinois.edu

UIUC

Size really does matter!

Bulk

Nano

Nanoparticles interact differently with light.
NANOYOU: Role Play

Is it right to sell antibacterial socks containing silver nanoparticles while is not known yet if they are entirely safe for the environment? Should nanosensors be used to diagnose medical conditions in the early stages when there are still no definite restrictions in place to protect patients' privacy? Is it ethically acceptable to use technologies developed for specific medical treatments for other scopes like improving human capabilities?...

Become a stakeholder in one of the NT dilemmas that NANOYOU is presenting to you and represent and defend your interests while trying to get to an agreement with other stakeholders.

Role Play games by NANOYOU are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. Permissions beyond the scope of this license may be available contacting ARTIFICI.

Become a member of the NANOYOU Schools' Community!

Schools from all over Europe are already teaching NT in their classrooms and sharing their experience and best practices in the NANOYOU Schools' Community.

Click here for more information on the Schools' Community and on how to register.
ADDITIONAL ACTIVITIES

- Solids, Metals, Alloys & Memory Metal
  - SEM Analysis

- Electrochemistry – Conductive Inks
  - SEM Analysis
Nanotechnology

ABOUT THIS SITE:

My name is Ms. Tina Sabatello. I am a teacher at Maine East HS in Park Ridge, IL.

I was a participant in the NSF Remote Access Nanotechnology Education Program through Oakton Community College for...
THANK YOU!

- Oakton Community College
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