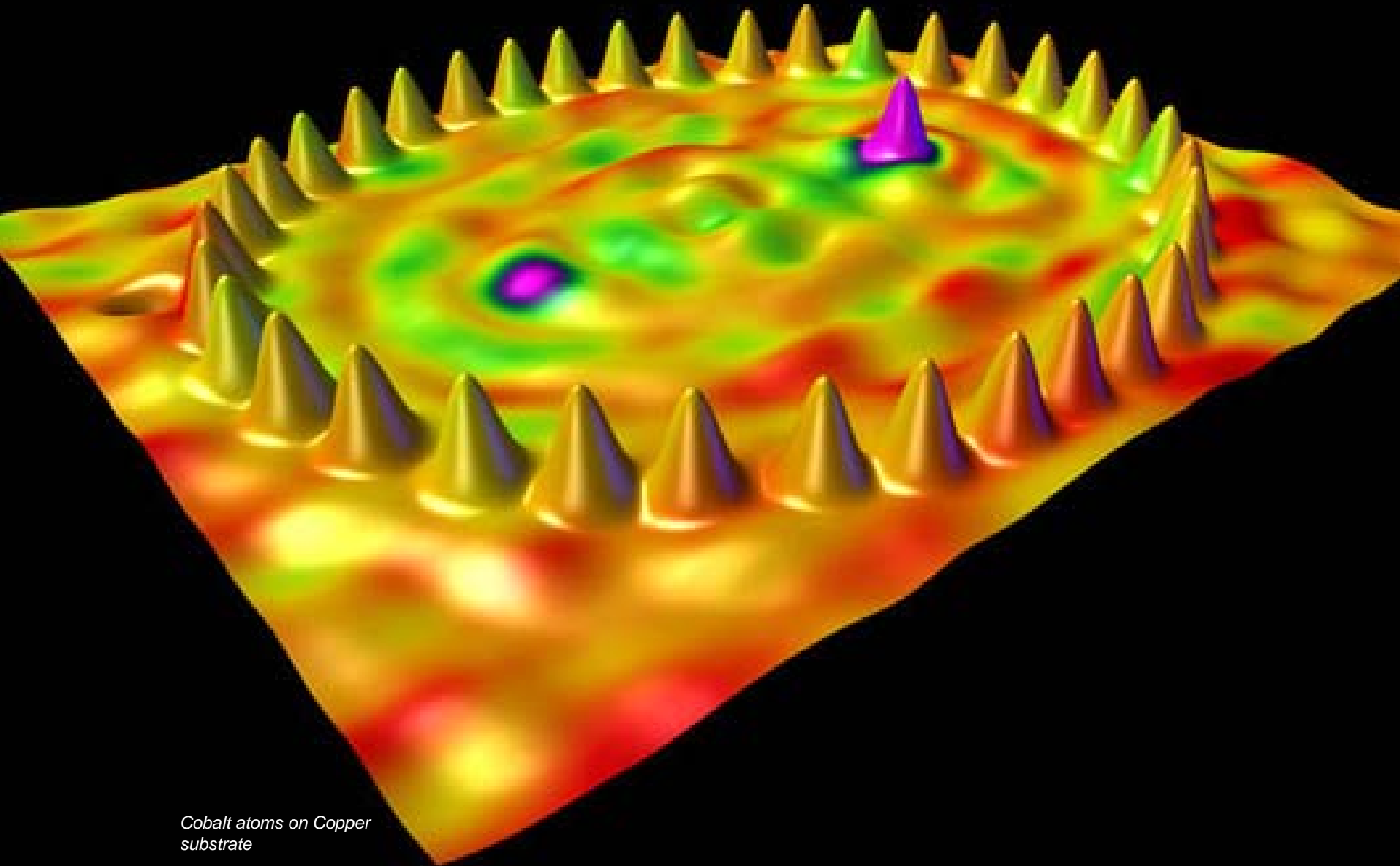


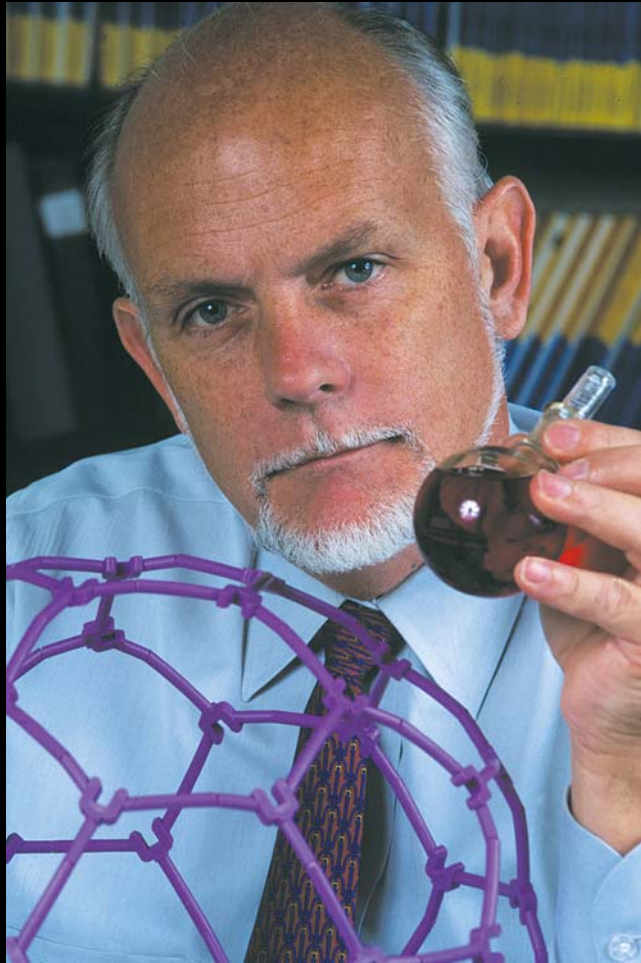
Nanotechnology: A Primer

Dr. Andrew Maynard
Chief Science Advisor
Project on Emerging Nanotechnologies

February 27, 2007



*Cobalt atoms on Copper
substrate*



Nanotechnology:

“The art and science of building stuff that does stuff at the nanometer scale”

Richard Smalley

(1943 - 2005)

Nobel Prize Winner, Chemistry (1996)

Macro-scale

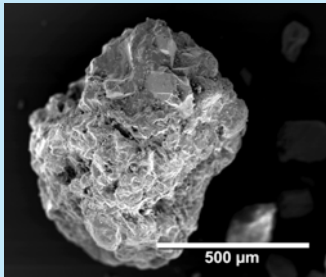
Nano-scale

Child



1 m 10 cm

Volcanic duct



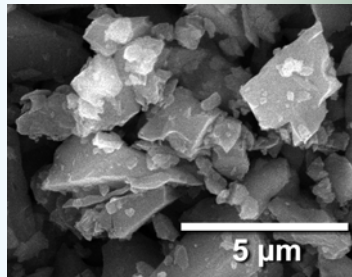
1 cm 1 mm

Human hair



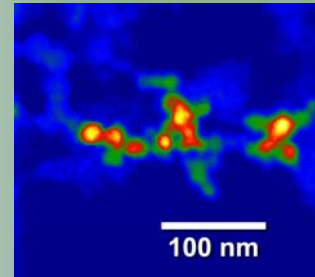
100 μm

Respirable silica



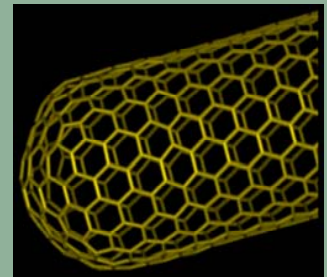
10 μm 1 μm

Welding fume

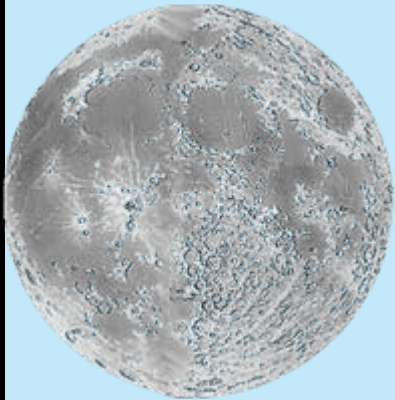


100 nm

Carbon nanotubes



10 nm 1 nm



Relative sizes



Consumer Products

"400 products worldwide, and counting"



New Materials

“Light as plastic, strong as steel”



Water Treatment

"Clean water, anytime, anyplace"



Energy

“Powerplastic™ that converts light to energy - anywhere” (Konarka)



Medicine

*"Smart drugs that kill the disease,
not the person"*

Nanotechnology is Diverse

Nanotechnology is not easily defined or contained, but instead provides a new toolset; a new way of engineering the world to achieve our goals

Nanotechnology is Global

Nanotechnology has a global presence, and its impacts will eventually be felt in every community around the world

Nanotechnology is Powerful

Nanotechnology will change our world, but the power it offers must be used responsibly if global benefits are to be realized