

NanoScale

Molly Clay

GK-12 Fellow

Vibes and Waves in Action

NSF Award #0841392

Honors Physics – Lowell High School

September 8, 2010



Nanogold

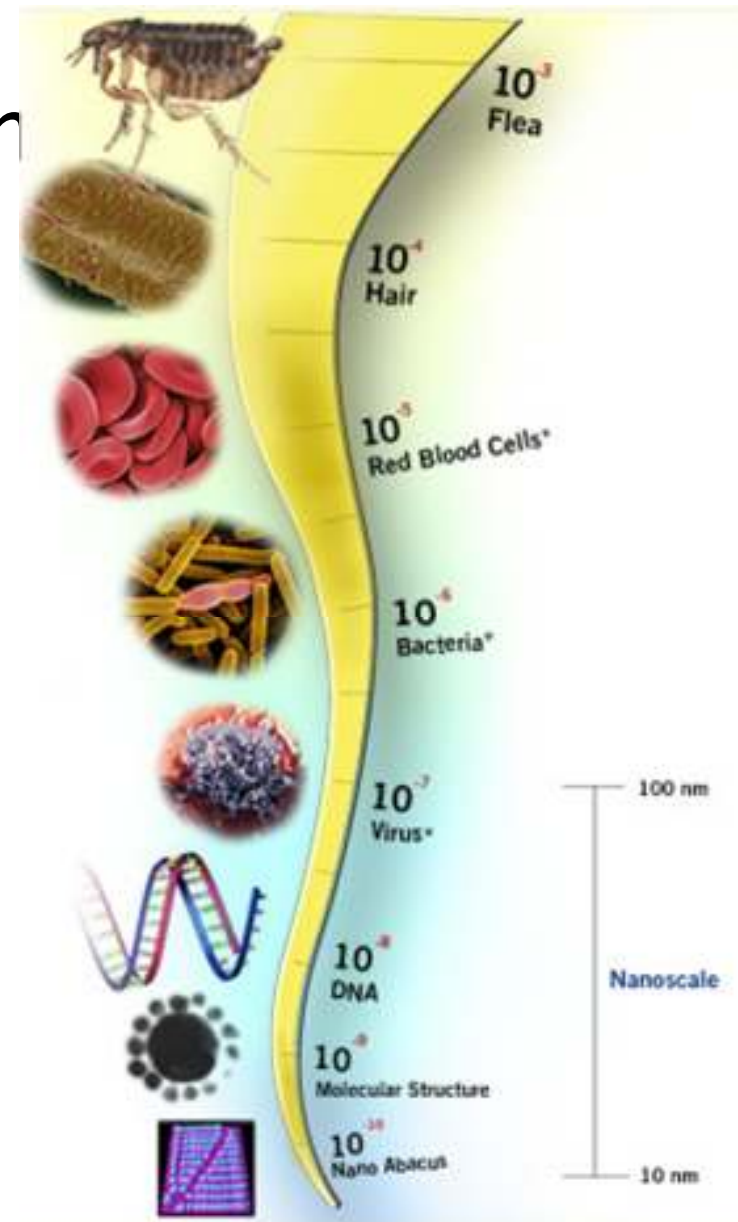
- ▶ Different sizes of particles sizes reflect and absorb light differently



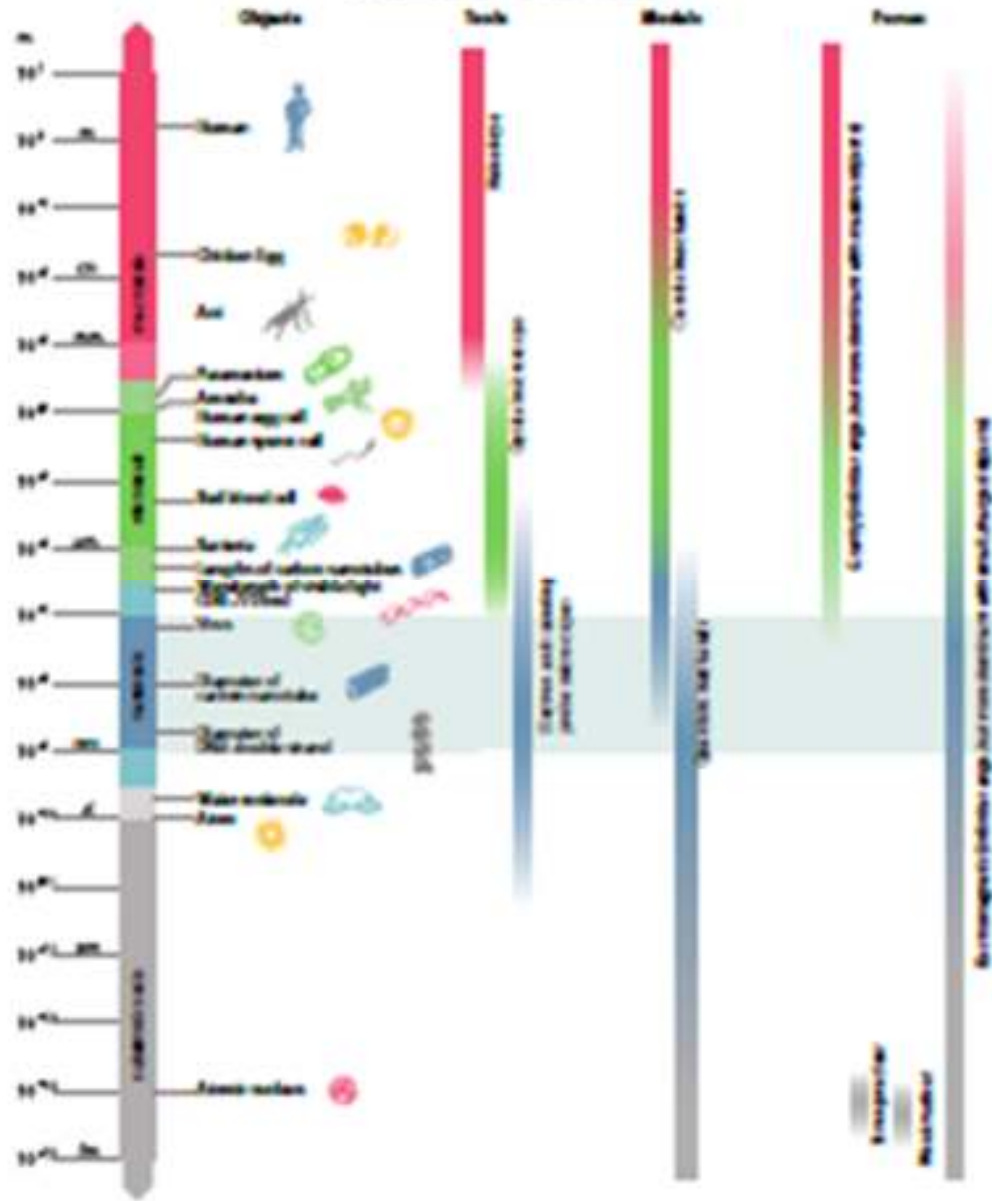
- ▶ We will explore this further when we use nanogold as sensors

Nanotechnology

- ▶ “Nano”
 - At least dimension in the range of 1 to 100nm
- ▶ 10^{-9} meters
One billionth of a meter!
- ▶ 1 / 10,000 of a human hair



Scale Diagram: Dominant Objects, Tools, Models, and Forces at Various Different Scales

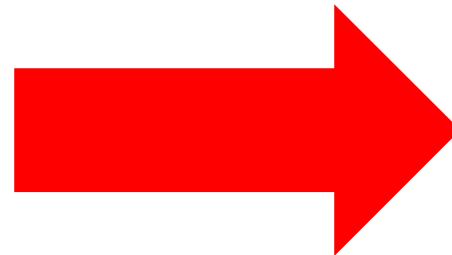
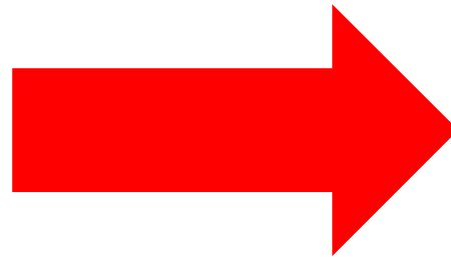
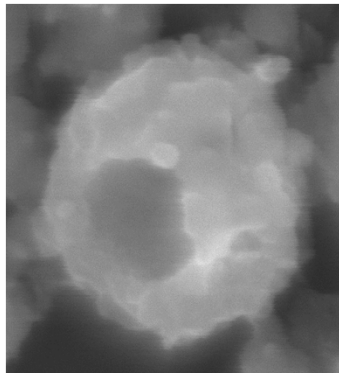


© 2005 Pearson Education, Inc. All rights reserved. This material is protected by copyright. No part of this material may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without prior written permission from Pearson Education, Inc.



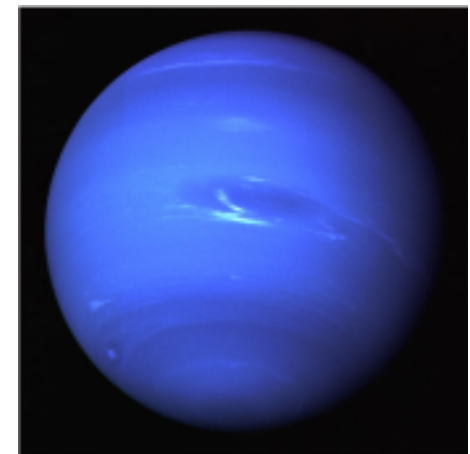
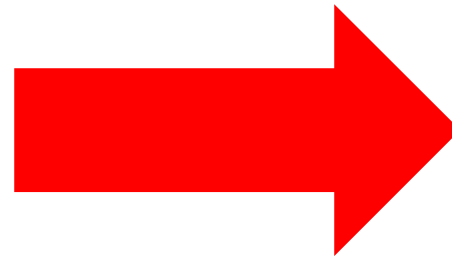
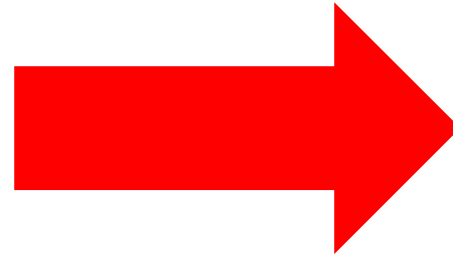
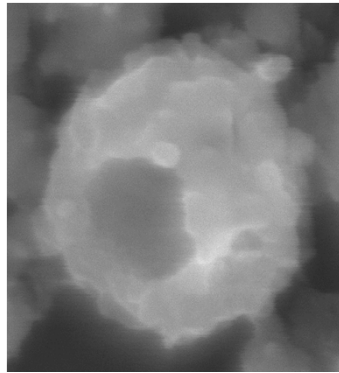
Question

- ▶ If a 1 nm diameter nanoparticle is scaled up to the size of a soccer ball then how big would the soccer ball be?



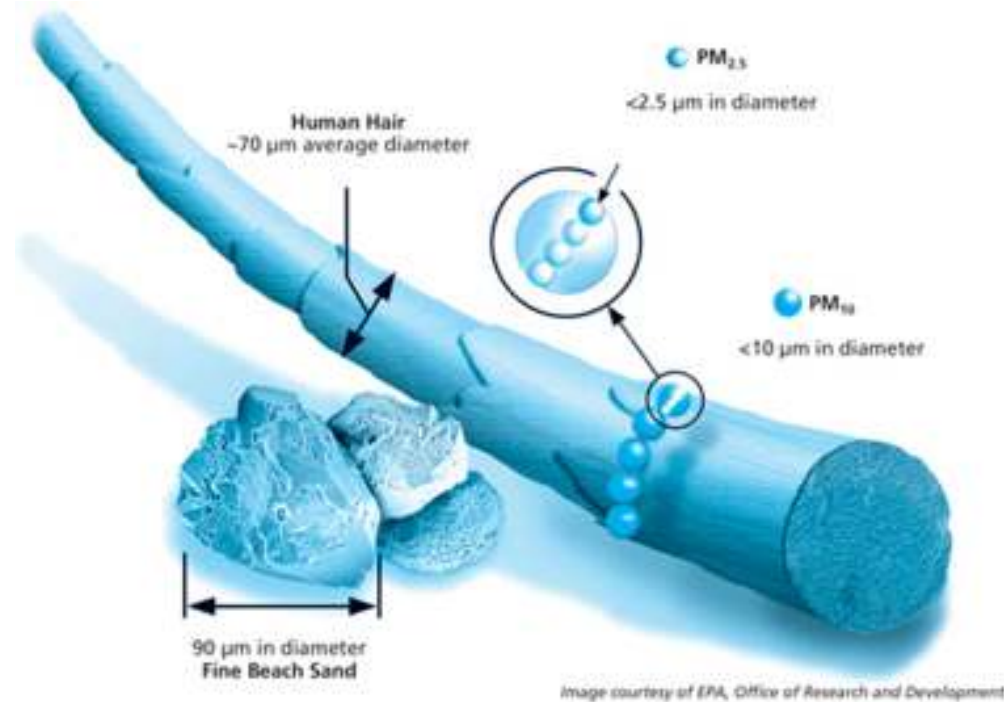
??

Answer 49,528km Size of Neptune!



Question

- ▶ How many nanometers make up the diameter of the human hair?
(70 μm diameter of the human hair)



Question

- ▶ How many 10nm^3 particles will fit into 10cm^3 box?

