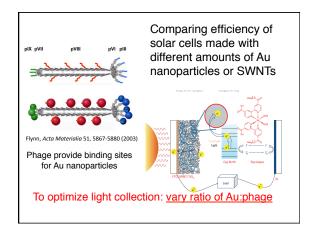
# **Biomaterials Engineering**

M3D2 11.15.12

- •Biomineralization with TiO2
- •Prep for TEM
- Research proposals



### Phage provide architecture for SWNTs



SWNTs have different amounts of metallic and semiconducting materials on them which can short circuit electron paths

To optimize electron collection: vary ratio of SWNTs:phage

- Solvent exposed surface for TiO2
- Unbundle SWNTs

Image from MIT news

## Reactions with titanium isopropoxide

- 1. For some: retrieve phage:SWNTs
- from dialysis bags, chill
  2. Calculate volume of 100% EtOH
- to make 95% with phage soln
  3. Cool EtOH in flask with 1:1
  ethylene glycol:EtOH:dry ice bath (-40°!)
- Add 15 parts Ti(I-pro)<sub>4</sub>: 1 part phage 100 ul SWNTs, >5'
- 5. +phage:material mix, 20' then warm to room temp one hour



# TEM

# TEM grid + harvest



- Vortex your samples
   Retrieve grid with tweezers
  - hold EDGE of grid!
- look for # under microscope
- 3. Place 5ul of nanocomposite onto grid
- 4. 5' then wick away any moisture
- 5. Wash with 100% EtOH (30" + wick)
- 6. Wash with H<sub>2</sub>O (30" + wick)
- 7. Harvest remaining materials 3K, 10' · supernatant to chem waste
  - wash with H<sub>2</sub>O
  - · Spin and decant sup to waste

DONE! (no lab next week but see you in lecture Tuesday!)