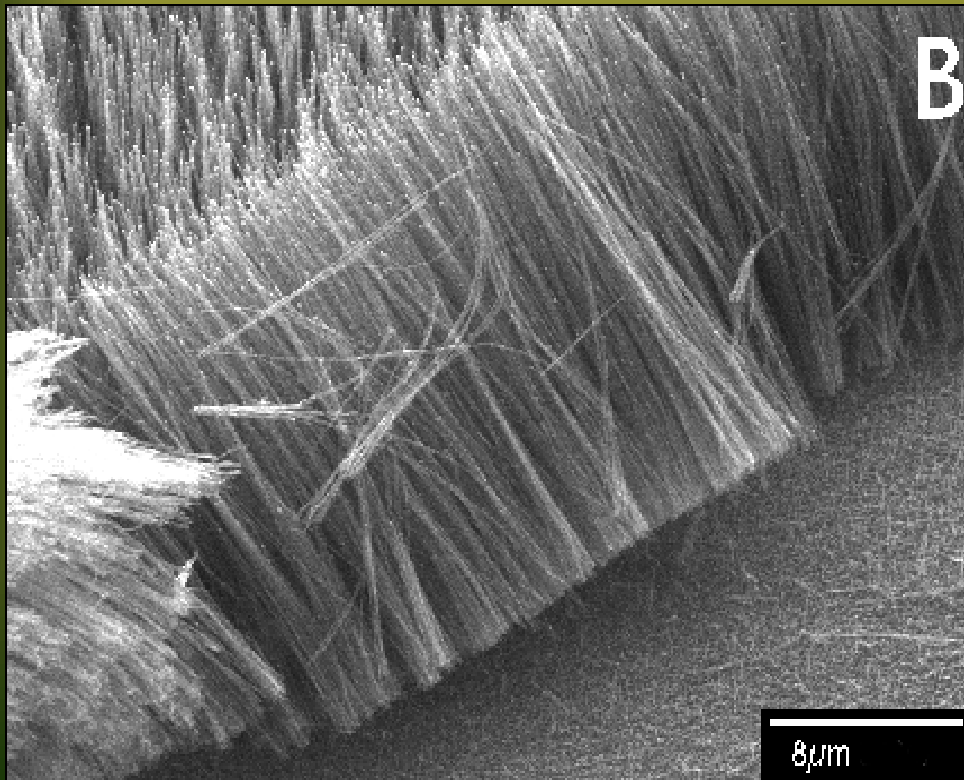


# Bucky Fur as Thermal Material

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“Bucky Fur” ...



... aligned film of  
Carbon Nanotubes  
attached to a  
metal substrate

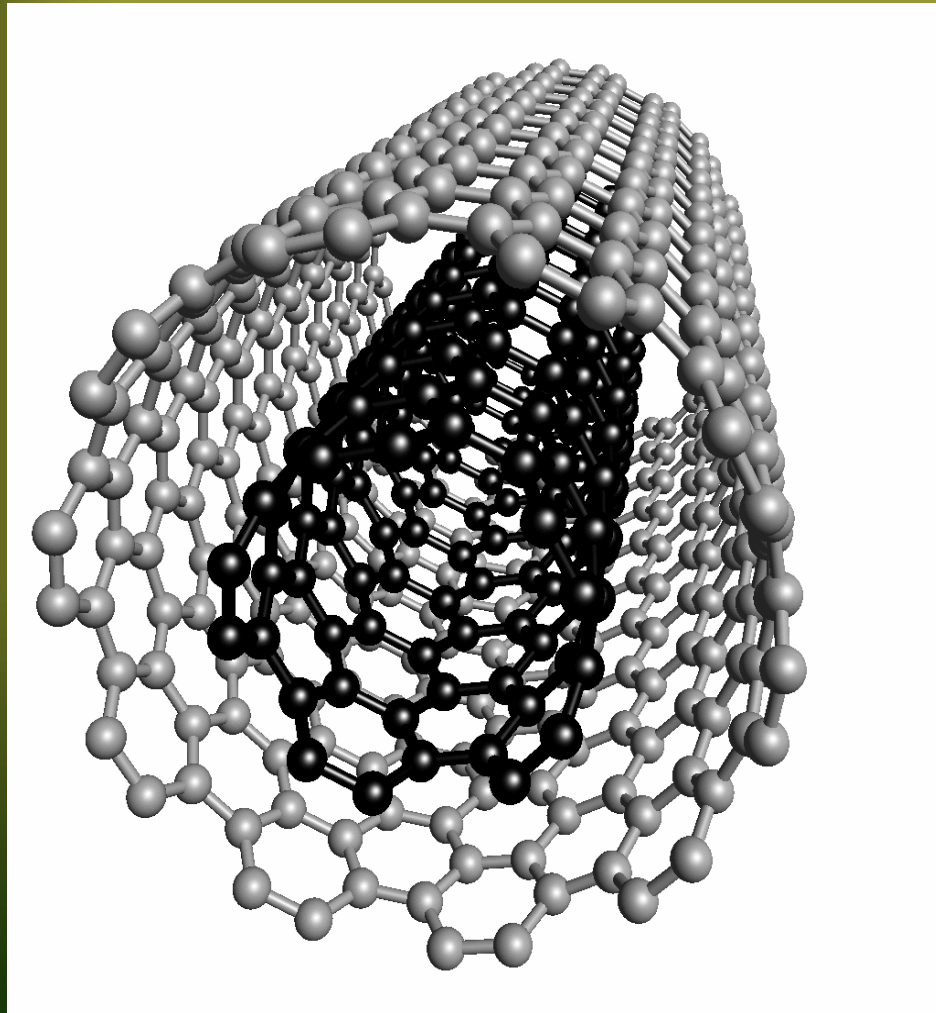
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# Unique properties of carbon nanotubes



- 1-20 nano-meters in diameter
- Atomically perfect
- Chemically inert
- 100 times stronger than steel
- Extremely high melting temperature
- Conduct heat efficiently
- Conduct electrons efficiently
- Can be filled with molecules
- Non-toxic

# High heat conductivity of nanotubes

- ◆ Nanotubes may help solve the heat problem:  
Efficient conductors of electrons and heat
- ◆ Record Heat Conductivity:
  - \* Diamond  
(isotopically pure): 3320 W/m/K
  - \* Nanotubes: 6,600 W/m/K (theory, SWNT)  
>3,000 W/m/K (experiment, MWNT)  
(room temperature values)

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# Thermally Conductive Bonds

## Nano-Velcro: Bonding at the nanometer scale

Engage



Disengage



### Mating nanotube elements

- Strong, permanent bonds
- Self-repairing bonds
- Chemically inert and non-toxic
- Thermally stable
- U.S. Patent applied for (Tomanek/Enbody/Kwon)