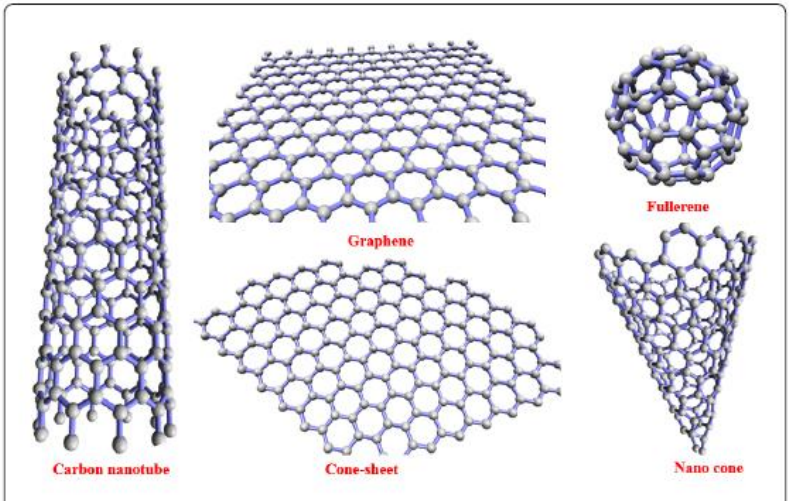
TYPES OF NANOMATERIALS

- Carbon Based Materials
- Metal Based Materials
- Dendrimers
- Composites

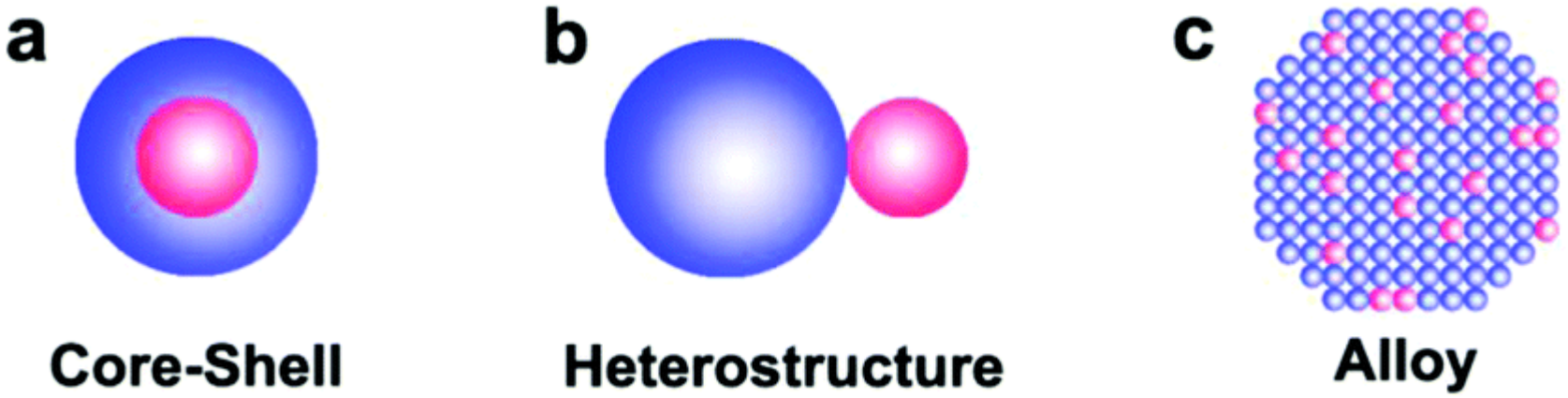
CARBON BASED MATERIALS

- These nanomaterials are composed mostly of carbon, most commonly taking the form of a hollow spheres, ellipsoids, or tubes.
- Spherical and ellipsoidal carbon nanomaterials are referred to as fullerenes, while cylindrical ones are called nanotubes.
- These particles have many potential applications, including improved films and coatings, stronger and lighter materials, and applications in electronics.



METAL BASED MATERIALS

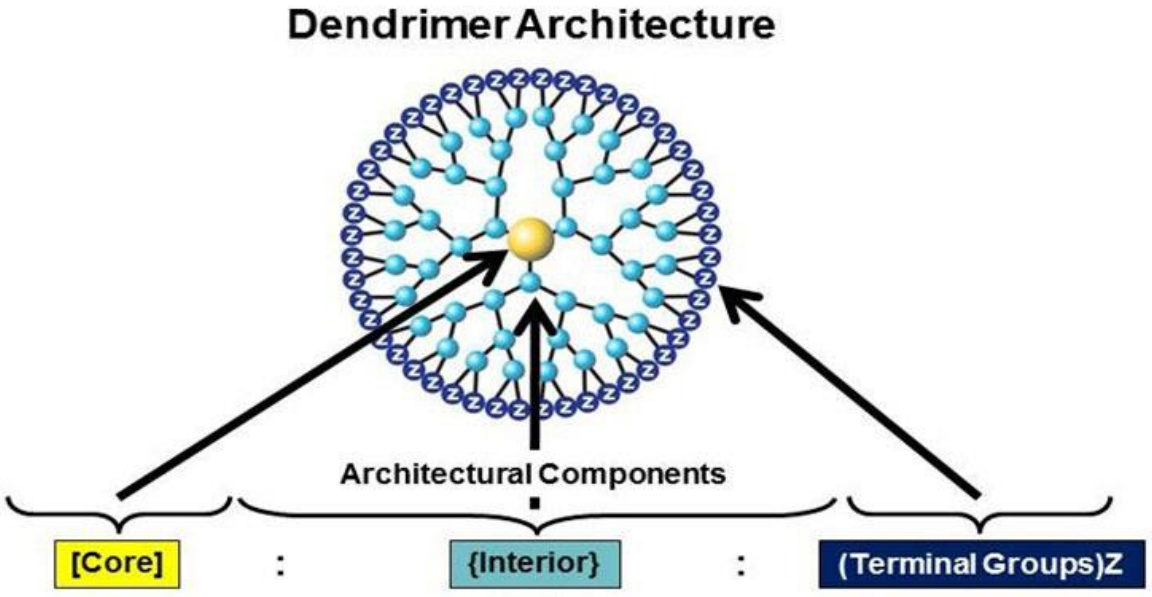
- These nanomaterials include quantum dots, nanogold, nanosilver and metal oxides, such as titanium dioxide.
- A quantum dot is a closely packed semiconductor crystal comprised of hundreds or thousands of atoms, and whose size is on the order of a few nanometers to a few hundred nanometers.
- Changing the size of quantum dots changes their optical properties.



DENDRIMERS

- These nanomaterials are nanosized polymers built from branched units. The surface of a dendrimer has numerous chain ends, which can be tailored to perform specific chemical functions.

- This property could also be useful for catalysis. Also, because three-dimensional dendrimers contain interior cavities into which other molecules could be placed, they may be useful for drug delivery.



Composites

- **Composites** combine nanoparticles with other **nanoparticles** or with **larger, bulk-type materials**.

- Nanoparticles, such as **nanosized clays**, are already being added to products ranging from auto parts to **packaging materials**, to **enhance** mechanical, thermal, barrier, and flame-retardant properties.