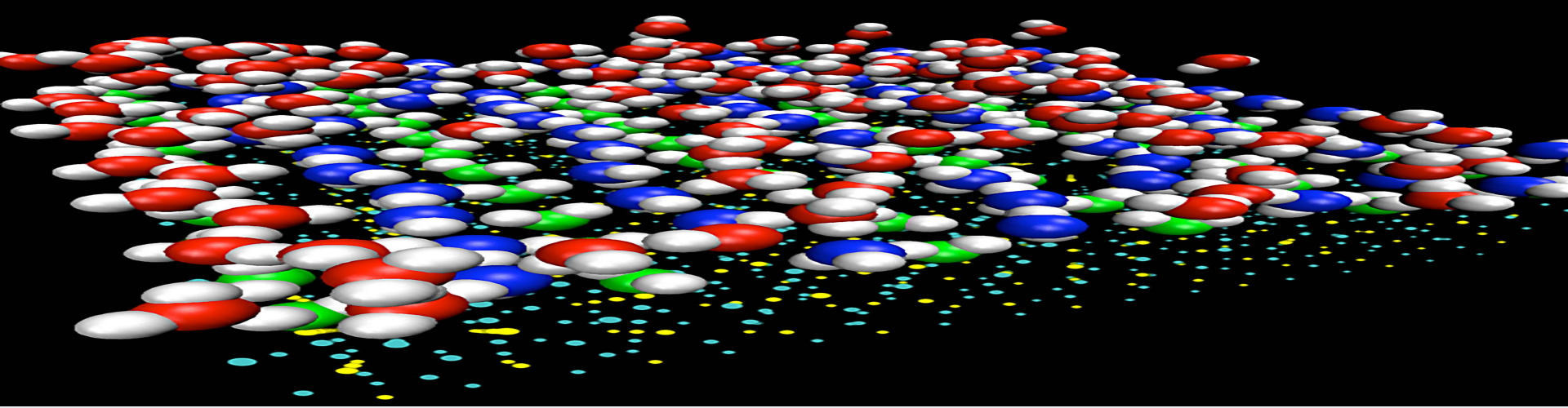
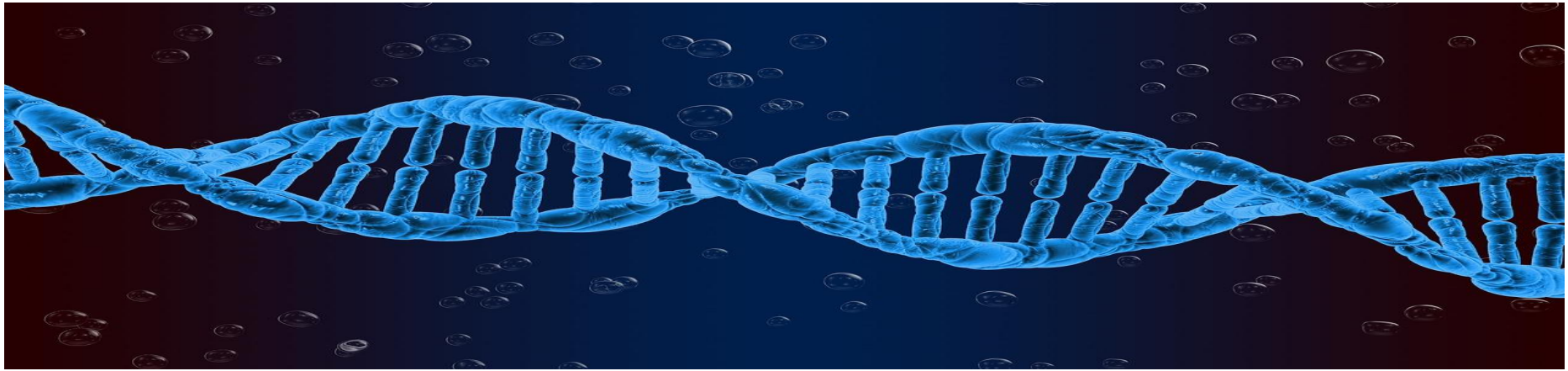


NANOCHEMISTRY AND NANOMETERIALS

- NANOSCIENCE-Branch of science deals with nanometrials , their properties and applications



Nano scale:1nm=10^{-9}m

Nano chemistry- Study of materials of the size 1 to 100 nm .

Examples for nano merterials :

DNA,RNA, nanogold,Carbon nanotube, fullerene etc

Based on the physical dimension nanoparticles are classified in to :-

1.Zero Dimensional:

eg-Fullerenes,Quantum dots

2.One Dimensional:

eg-CNT,Nanowires

3.Two Dimensional:

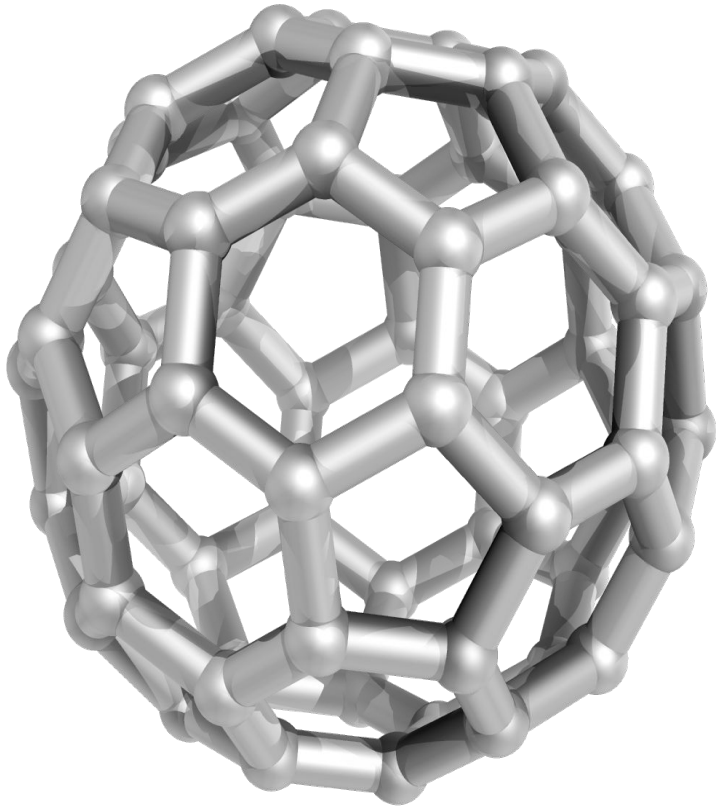
Eg-graphene

4. Three Dimensional:

eg-Boxshaped graphene(BSG)

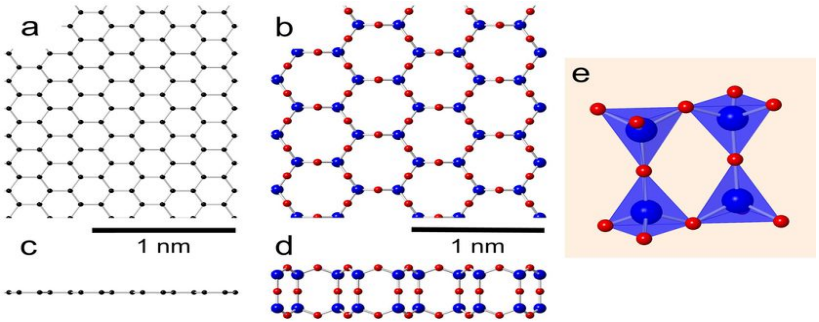
FULLERENE

- Allotropes of carbon
- It is also known as buckyballs,molecules of carbons connected with single and double bonds
- The first fullerene molecule is buckminsterfullerene(C-60)
- Diameter equal to 1.01nm
- It has 20 hexagons and 12 pentagons,with carbon atom at each vertex



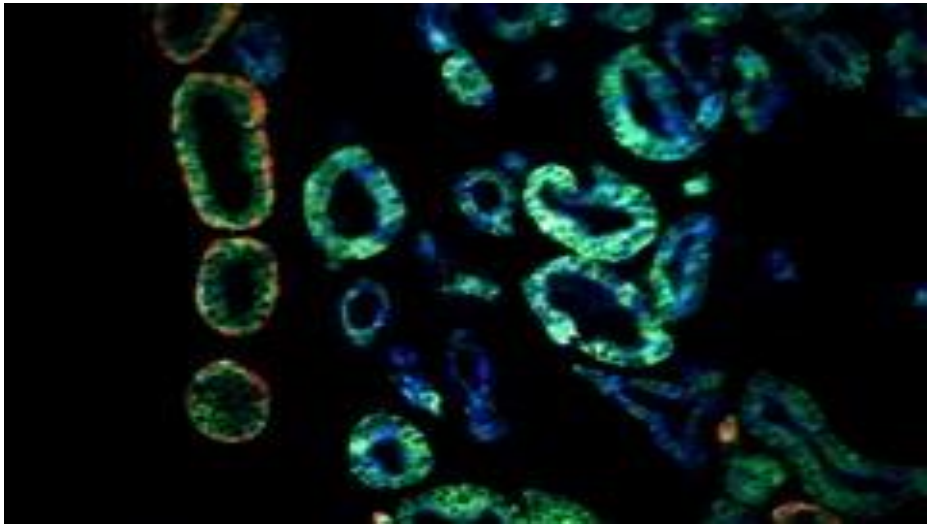
Graphene:-

- Allotrope of carbon
- Hexagonal lattice
- Consist of graphite sheet of SP^2 hybridised carbon atom
-



Quantum dots:-

Nanocrystals reffered as quantum dots

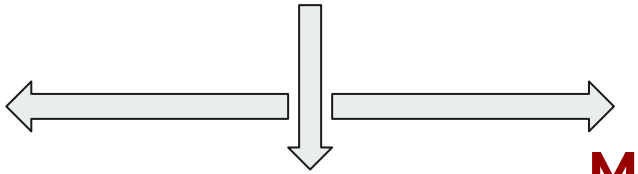


Applications of Nanomaterials:-

1. **Act as better catalyst**
2. **Tumours can be detected and located with high accuracy**
3. **DNA mapping of newborns**
4. **Used for drug delivery to the exact spot in the body**
5. **Used in the cancer treatment**
6. **Used in cosmetics , sun screen ,electronics etc…**
7. https://www.youtube.com/watch?v=1QwyMWM0Jjg

CARBON NANOTUBES(CNT)

- They are cylindrical tubes formed by rolling one or more graphene sheets
- ➔ Base on the lyres of graphene sheets CNT classified as



Multiwalled
Consist multiple lyer

Single walled
Consist a single lyer