BALL MILLING METHOD OF SYNTHESIS OF NANOMATERIALS:

Principle:

Ball Milling is a process used to grind many kinds of mine and other materials into fine powder.

Tiny rigid balls, usually, ceramic, flint pebbles and stainless steel in a concealed container collide with each other to generate high pressure. The bulk material placed in this container is then crushed into nano crystal.

Construction and Working:

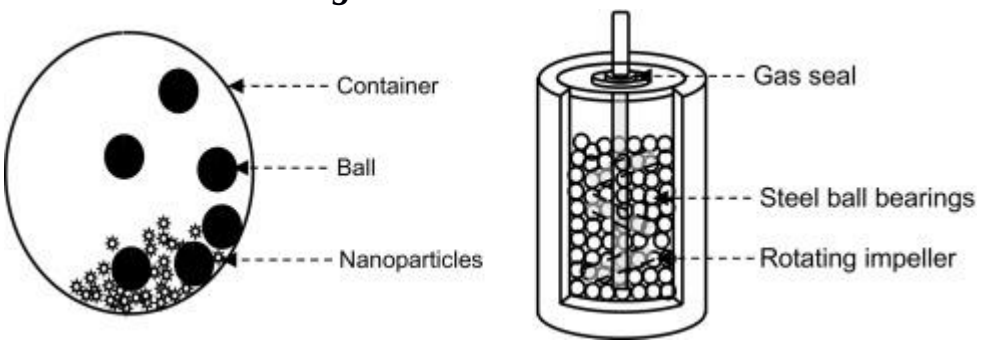

Fig. Ball milling Process

The apparatus consists of a container with an air tight lid.

Hardened steel or tungsten carbide balls are put in a container along with powder of particles (50μm) of a desired material as shown . The container is closed with tight lids. When the container is rotating around the central axis, the material is forced to press against the walls. The milling balls impart energy on collision and produce smaller grains of nano-meter sizes.This process is used in producing metallic and ceramic nano materials.These mills are equipped with grinding media composed of wolfram carbide or steel.

Advantages

- This process is simple and inexpensive.
- Ball milling can be used to make carbon nanotubes and boron nitride nanotubes.
- It can be readily implemented and commercial.