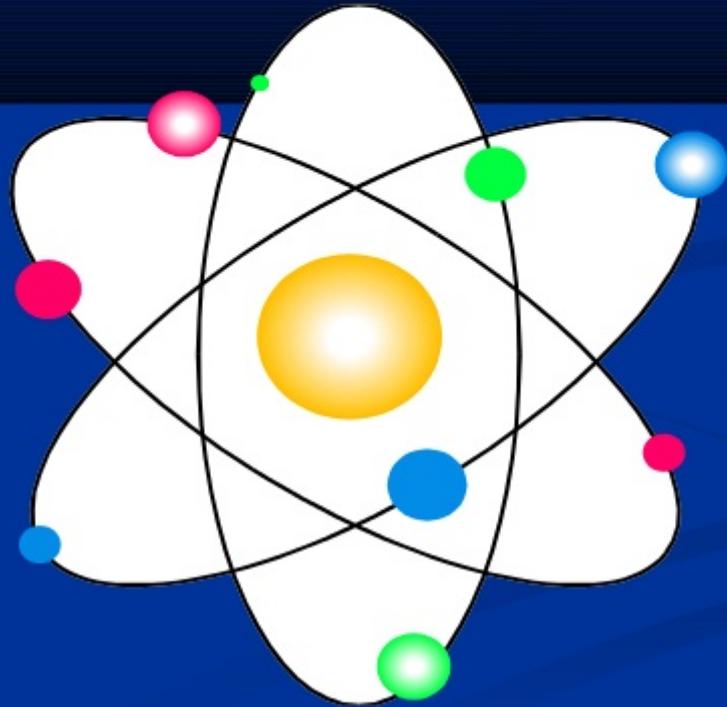


Chapter 4

“Atomic Structure”



OBJECTIVES

- ▶ MATTER
 - ▶ CONTRIBUTORS
 - ▶ DALTON ATOMIC MODEL
 - ▶ ATOM
 - ▶ ELEMENT
 - ▶ FUNDAMENTAL PARTICLES OF ATOM
 - ▶ DISCOVERY OF FUNDAMENTAL PARTICLES AND THEIR PROPERTIES
- 

MATTER

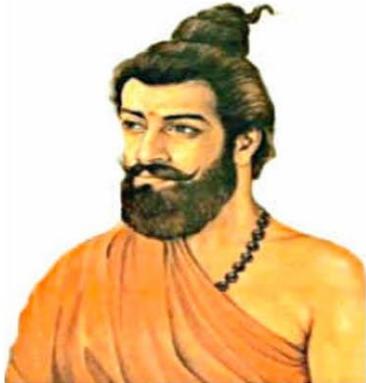
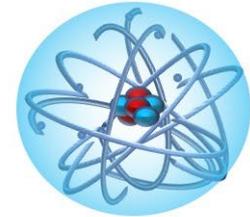
It is defined as anything which has mass and occupies space

Pen, chalk, window etc

**What is the
ultimate particle
in matter ?**

Contributors to Atomic structure

WHO DISCOVERED ATOMS?



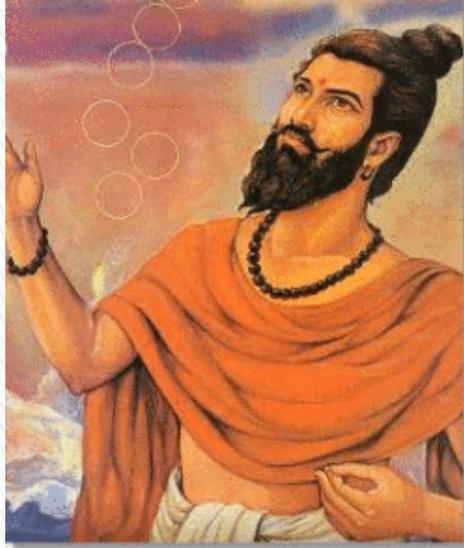
MAHARISHI KANAD – INDIAN



DEMOCRITUS – GREEK



JOHN DALTON – ENGLISH



▶ ATOMIC THEORY OF MAHARISHI KANAD

- ▶ Paramanus
- ▶ Para—ultimate
- ▶ Anu- particle
- ▶ Not in free state
- ▶ Combine - molecule



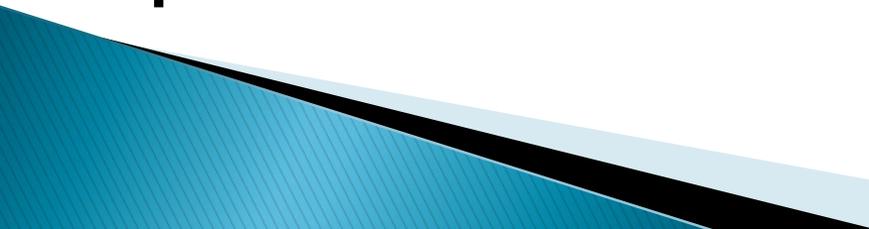
▶ DEMOCRITUS ATOMIC THEORY

- ▶ Paramanu
- ▶ Paramamu-atom
- ▶ Atom-indivisible

John Dalton's atomic theory or model

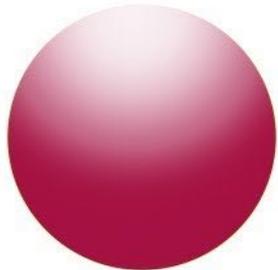


- ▶ Matter consists of very small and indivisible particles called atoms.
- ▶ Atoms can neither be created nor be destroyed
- ▶ The atoms of an element are identical in all respects i.e. size, mass, density, chemical properties, but they differ from the atoms of other elements.
- ▶ Atoms of an element combine in small numbers to form molecules of that element.
- ▶ Atoms of an element combine with the atoms of another element in a simple whole-number ratio to form molecules of compounds.
- ▶ Atom is the smallest unit of matter which takes part in a chemical reaction.

- ▶ Static electricity
 - ▶ Faraday – flow of electricity is due to charged particles.
 - ▶ G.J. Stoney– named –electron
 - ▶ J.J.Thomson –electron –negatively charged.
 - ▶ E.Goldstein–Protons– positively charged.
 - ▶ James Chadwick–Neutrons–neutral particle
- 

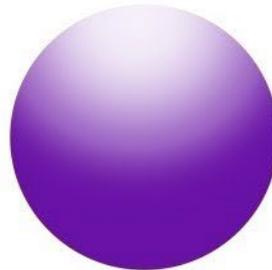
Fundamental Particles of an Atom

Electron



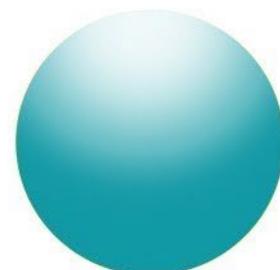
negative

proton



positive

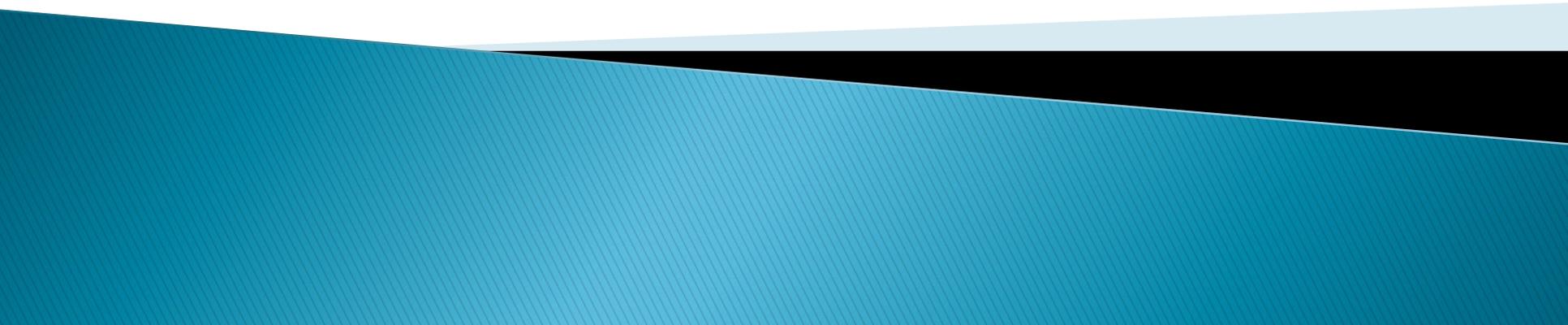
Neutron



neutral

**Instrument used to observe
individual atoms**

Electron microscope



ELEMENTS

- ▶ Made of only one type of atoms.
 - ▶ Pure substance
 - ▶ Neither formed nor decomposed by simple methods
 - ▶ Example– carbon
 - ▶ Cannot be split by simple methods
Like heating , breaking etc
 - ▶ Radioactivity– one elementary substance into another.
- 

ATOM

- ▶ Smallest particle of an element
- ▶ Exhibits all properties of that element.
- ▶ May or maynot exist independently
- ▶ Takes part in chemical reaction
- ▶ Example–Zn
- ▶ **Smallest possible unit that exhibit the property of that element**