

ALLOTROPY

PRESENTED BY..

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ALLOTROPY

*The term allotropy comes from Greek word
“allos- other” & “tropos-form”

*The allotropy which is also called allotropism.

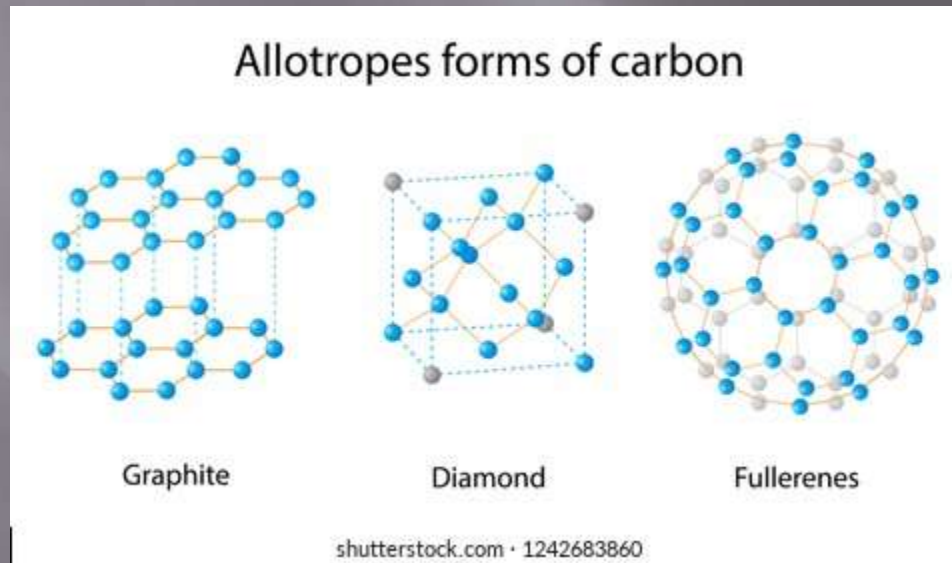
The property of some chemical elements to exist in two or more different forms in the same physical state known as ALLOTROPES of the element.

Allotropes are different structural modifications of an element.,

Eg: Allotropes of carbon(Forms:Diamond, fullerene, Graphite...)

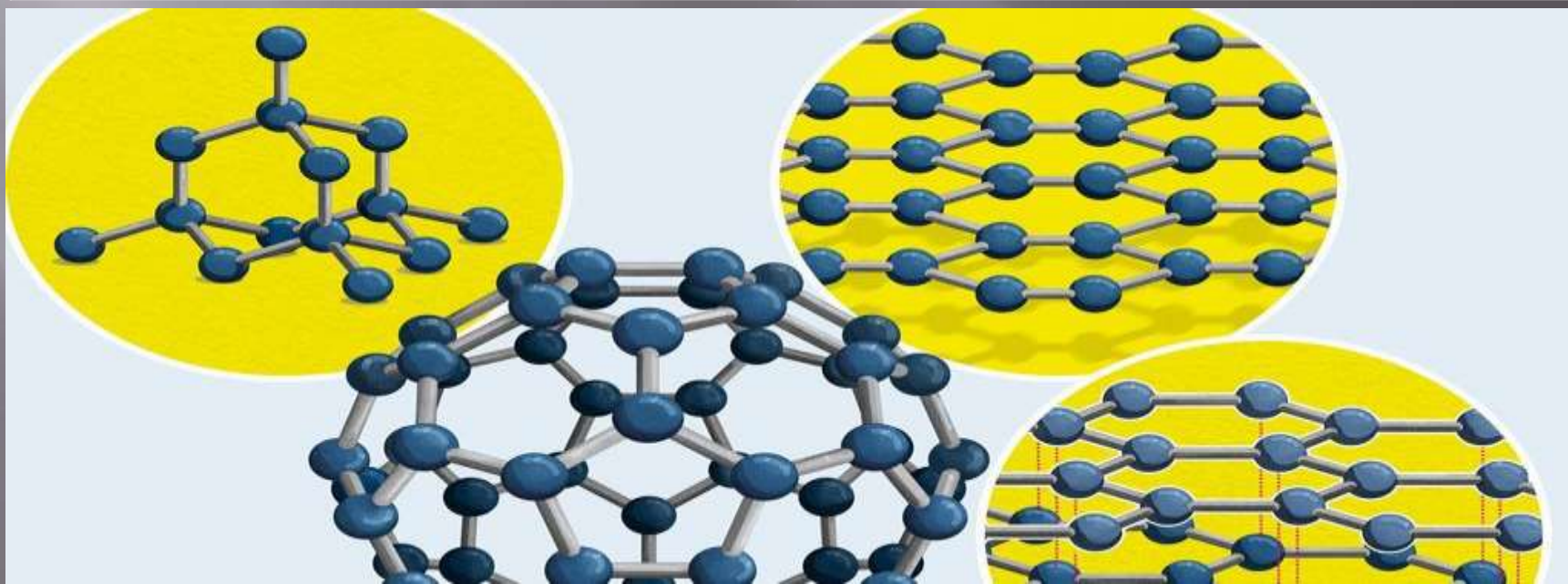
EXAMPLE OF ALLOTROPY

Diamond and graphite are two allotropes of carbon :pure forms of the same element that differ in crystalline structure..



GROUPS OF ALLOTROPS

ALLOTROPIES ELEMENT	POSITION IN PERIODIC TABLE(GROUPS)
CARBON	14 th grpoup
PHOSPHOROUS	15 th group
OXYGEN	16 th group
SULFUR	16 th group
SELENIUM	16 th group



TYPES OF ALLOTROPES(carbon)

Element	Allotropes
CARBON	<ul style="list-style-type: none">• Diamond – an extremely hard, transparent crystal, with the carbon atoms arranged in a tetrahedral lattice. A poor electrical conductor. An excellent thermal conductor.• Lonsdaleite – also called hexagonal diamond.• Graphene – is the basic structural element of other allotropes, nanotubes, charcoal, and fullerenes.• Q-carbon – a ferromagnetic, tough, and brilliant crystal structure that is harder and brighter than diamonds. <i>[dubious – discuss]</i>

TYPES(carbon)

Carbon

- **Graphite** – a soft, black, flaky solid, a moderate electrical conductor. The C atoms are bonded in flat hexagonal lattices (**graphene**), which are then layered in sheets.
- **Linear acetylenic carbon** (Carbyne)
- **Amorphous carbon**
- **Fullerenes**, including **Buckminsterfullerene**, a.k.a. "buckyballs", such as C_{60} .
- **Carbon nanotubes** – allotropes of carbon with a cylindrical nanostructure.
- **Schwarzites**
- **Cyclocarbon**
- **Glassy carbon**

TYPES(phosphorous)

Phosphorus

- **White phosphorus** – crystalline solid of tetraphosphorus (P_4) molecules
- **Red phosphorus** – amorphous polymeric solid
- **Scarlet phosphorus**
- **Violet phosphorus** with monoclinic crystalline structure
- **Black phosphorus** – semiconductor, analogous to graphite
- **Diphosphorus** – gaseous form composed of P_2 molecules, stable between $1200\text{ }^\circ\text{C}$ and $2000\text{ }^\circ\text{C}$; created e.g. by dissociation of P_4 molecules of white phosphorus at around $827\text{ }^\circ\text{C}$

TYPES(Oxygen,sulfur,selenium)

Oxygen	<ul style="list-style-type: none">• Dioxygen, O_2 – colorless (faint blue liquid and solid)• Ozone, O_3 – blue• Tetraoxygen, O_4 – metastable• Octaoxygen, O_8 – red
Sulfur	<ul style="list-style-type: none">• Cyclo-Pentasulfur, Cyclo-S_5• Cyclo-Hexasulfur, Cyclo-S_6• Cyclo-Heptasulfur, Cyclo-S_7• Cyclo-Octasulfur, Cyclo-S_8
Selenium	<ul style="list-style-type: none">• "Red selenium," cyclo-Se_8• Gray selenium, polymeric Se• Black selenium, irregular polymeric rings up to 1000 atoms long• Monoclinic selenium, dark red transparent crystals

CHEMISTRY TERMS

- ▣ ADHESION= colloidal property
- ▣ DIFFUSION= molecules move from higher concentration to lower concentration solute
- ▣ OSMOSIS = molecules move from lower concentration to higher concentration solute.
- ▣ IUPAC =International union of pure and applied chemistry..
- ▣ HOMOGENEOUS= SAME NATURE
- ▣ HETEROGENEOUS= NOT SAME.....,
▣ by...(M.priyadharshan...)