

# Chapter: Carbon and Hydrocarbons

## Section 1: Abundance and Importance of Carbon

Carbon:

- 17<sup>th</sup> in abundance in Earth's crust
- Important because its found in foods, living matter, and common fuels
- Nonmetallic properties
- Electron configuration
- Hybridization of Carbon
  - Single bonds... $sp^3$
  - Double bonds... $sp^2$
  - Triple bonds... $sp$

**Diamond:** a colorless, crystalline, solid form of carbon

- Hardest material known
- Most dense form of carbon
- Extreme high melting point
- Used for cutting, drilling, and grinding
  - Used in industry are not gem quality

**Graphite:** a soft, black, crystalline form of carbon that is a fair conductor of electricity

- Greasy and crumbles easily
- Arranged in layers that form thin hexagonal plates
  - Layers slid past each other
- Lower density
- Resonance hybrid orbitals

- **Delocalized electrons:** electrons shared by more than two atoms
- High melting point

**Fullerenes:** dark-colored solids made of spherically networked carbon-atom cages

- C<sub>60</sub> is the most familiar
- Scientists are trying to find practical uses