MATERIALS ENGINEERING

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MATERIALS ENGINEERING

Without Material there is no engineering

HISTORICAL PERSPECTIVE

Materials science has shaped the development of civilizations since the dawn of mankind. Better materials for tools and weapons has allowed mankind to sp read and conquer, and advancements in material processing like steel and alu minum production continue to impact society today. Historians have regarded materials as such an important aspect of civilizations such that entire periods of time have defined by the predominant material used (Stone Age, Bronze Ag e, Iron Age, etc.).

Why to study Materials ?

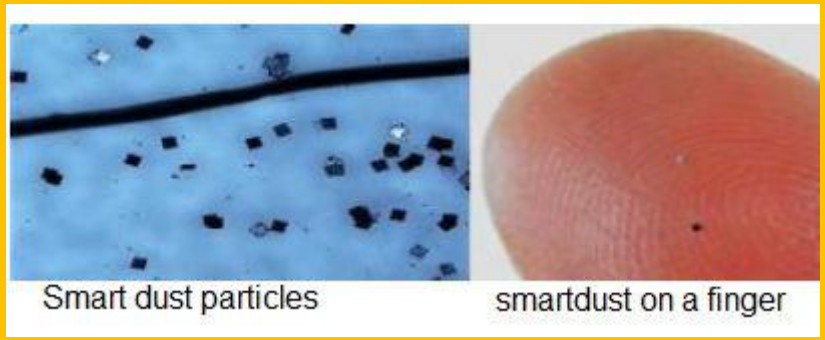
- Early civilizations have been designated by the level of their materials deve lopment (Stone Age, Bronze Age, Iron Age).

The earliest humans had access to only a very limited number of materials, those that occur naturally: stone, wood, clay, skins, and so on.

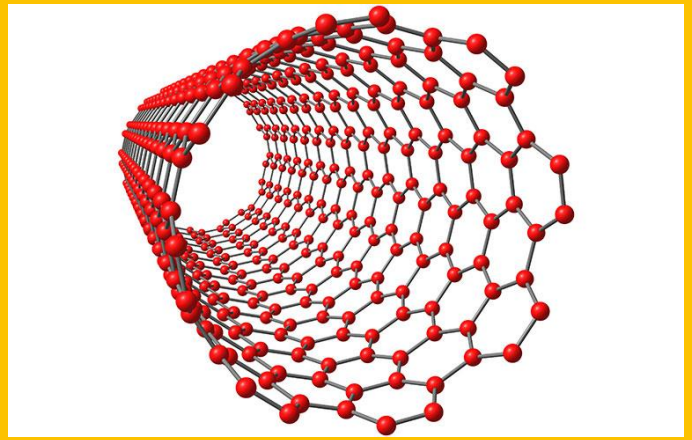
Application of materials in Aerospace

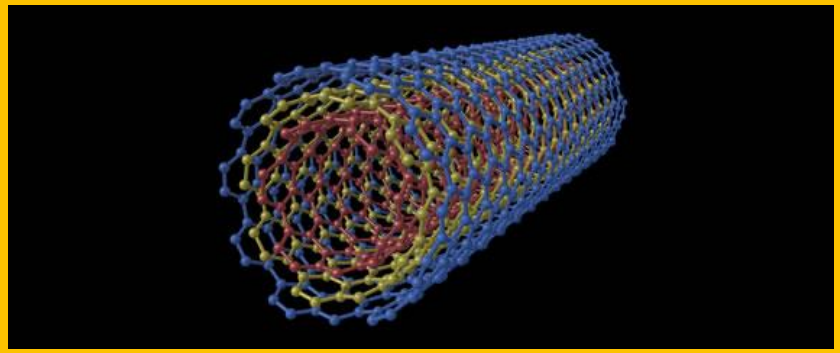
Defence and space

Smart materials



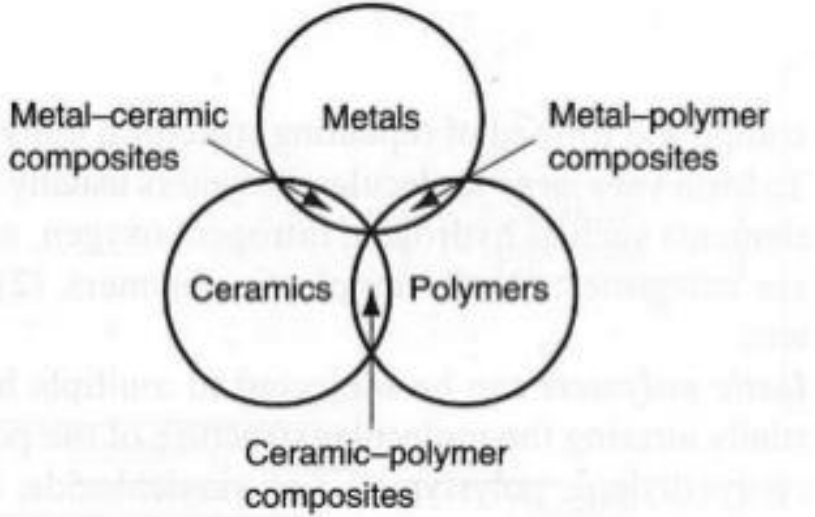
Nano-materials





CLASSIFICATION OF MATERIALS

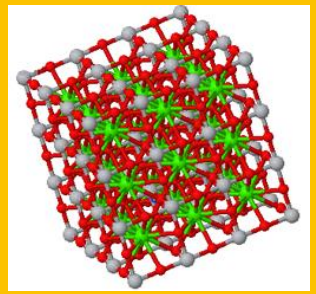
1. Metals
2. Ceramics
3. Polymer
4. Composites



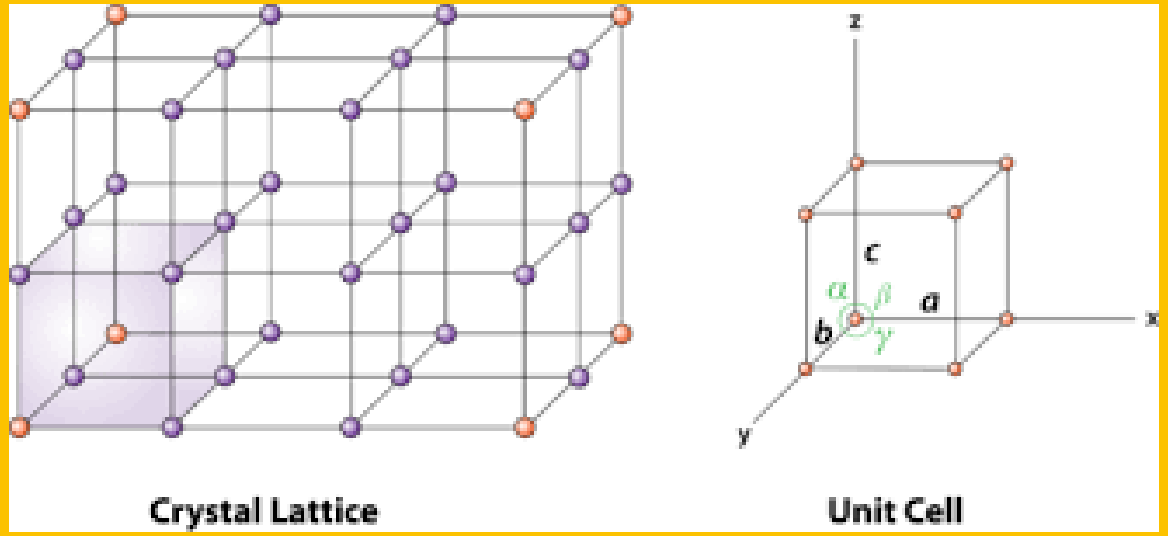
Crystal Structure

- Crystallinity: Repeating or periodic array over lar ge atomic distances. 3-D pattern in which each atom is bonded to its nearest neighbours

- Crystal structure: the manner in which atoms, ions, or molecules are spatially arranged.



Unit cells



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Thank You