

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

*Minerals,
their Characteristics
&
Classifications*

CONTENTS

- Definition
- Chemical Composition
- Crystal Structure
- Physical properties of Minerals(color, Streak, Luster, Crystal Habit, Cleavage, Fracture, hardness, Specific Gravity, Taste, Other properties)
- Common Rock forming Minerals

Definition of Mineral

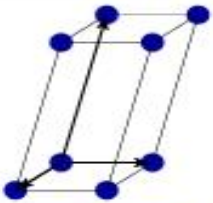
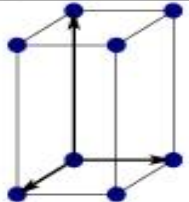
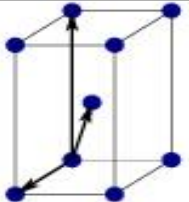
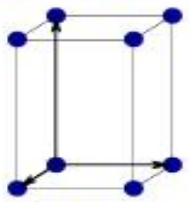
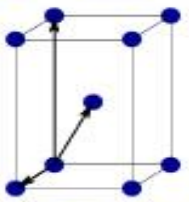
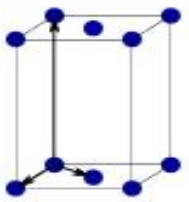
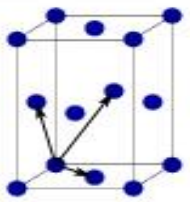
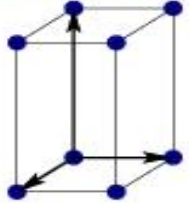
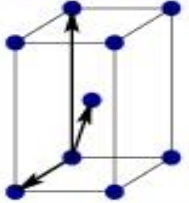
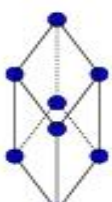
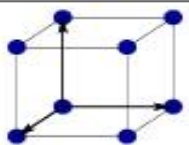
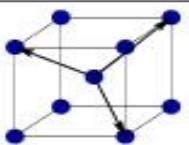
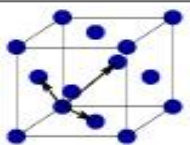
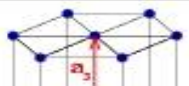
- Naturally occurring solid
- Formed by geological process
- Characteristic chemical Composition
- Ordered atomic structure
- Specific physical properties

Chemical Composition

- Continuous series
- Mineraloid
- Nonminerals

Crystal Structure

- Bravais Lattices
- Determination of crystal structure
- Polymorphism

Bravais lattice	Parameters	Simple (P)	Volume centered (I)	Base centered (C)	Face centered (F)
Triclinic	$a_1 \neq a_2 \neq a_3$ $\alpha_{12} \neq \alpha_{23} \neq \alpha_{31}$				
Monoclinic	$a_1 \neq a_2 \neq a_3$ $\alpha_{23} = \alpha_{31} = 90^\circ$ $\alpha_{12} \neq 90^\circ$				
Orthorhombic	$a_1 \neq a_2 \neq a_3$ $\alpha_{12} = \alpha_{23} = \alpha_{31} = 90^\circ$				
Tetragonal	$a_1 = a_2 \neq a_3$ $\alpha_{12} = \alpha_{23} = \alpha_{31} = 90^\circ$				
Trigonal	$a_1 = a_2 = a_3$ $\alpha_{12} = \alpha_{23} = \alpha_{31} < 120^\circ$				
Cubic	$a_1 = a_2 = a_3$ $\alpha_{12} = \alpha_{23} = \alpha_{31} = 90^\circ$				
					

Physical Properties

- **Color**



Physical Properties

- Streak

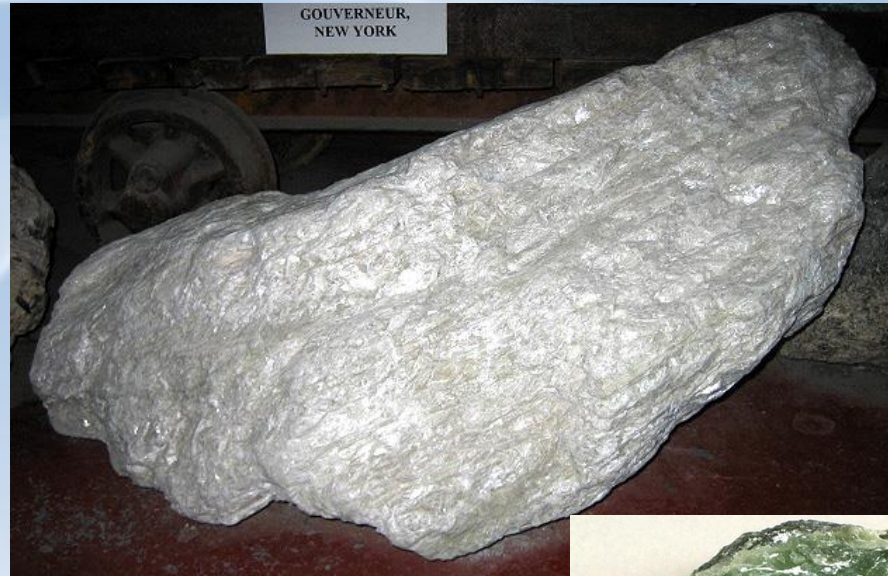


Physical Properties

- Luster



Physical Properties



Physical Properties

- Crystal Habit



- Acicular



Platy



Tabular

Physical Properties



• Prismatic



Fibrous



Dendritic

Physical Properties



• Raniform



Botryoidal



Amygdaloidal

Physical Properties

- Cleavage

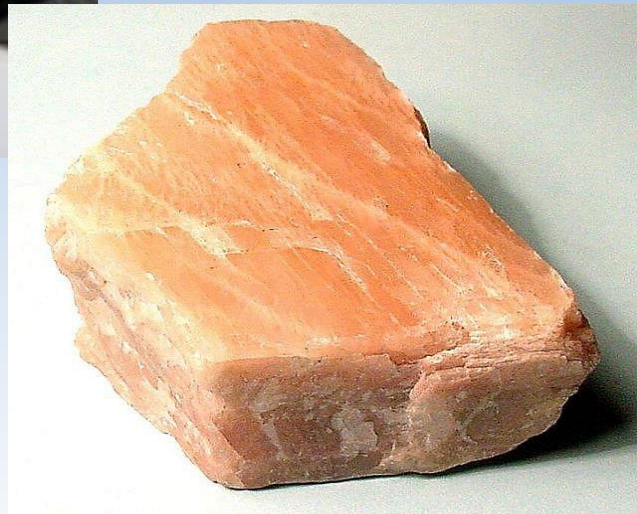


Foliated

Gneiss



Slate



Perfect

Good

Distinct

imperfect

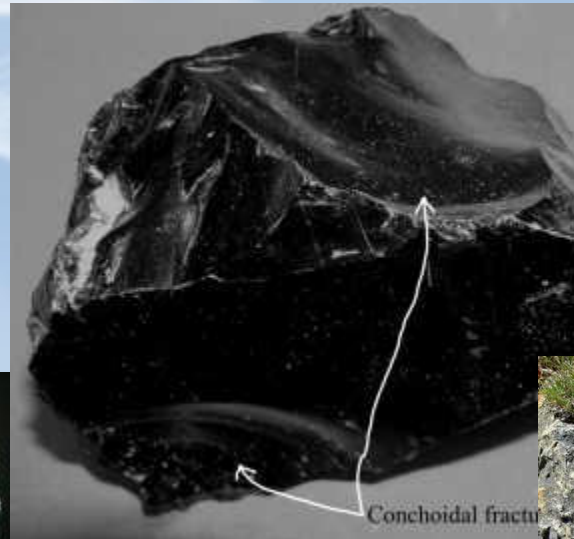
Physical Properties

- Fracture



Uneven

Even



Conchoidal



Hackly

Physical Properties

- Hardness
- Specific Gravity
- Taste
- Other Properties

Common Rock Forming Minerals

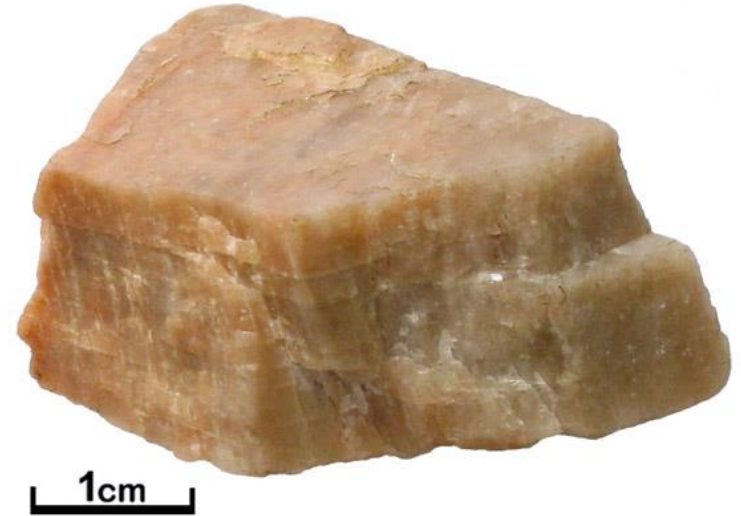
- Quartz



© geology.com

Common Rock Forming Minerals

- Feldspar



Common Rock Forming Minerals

- Mica



Common Rock Forming Minerals

- Amphibole



Common Rock Forming Minerals

- Olivine



Common Rock Forming Minerals

- Pyroxene



The background is a dark gradient of purple, blue, and red. It features several large, glowing question marks in various colors (purple, red, yellow) and the word "Questions" in a stylized, glowing font. The word "Questions" is written in a light grey, serif font with a bright yellow outline and a soft glow. It is positioned in the center of the image, partially overlapping a large, glowing purple question mark. Other glowing question marks are visible in the background, some in red and some in yellow, creating a sense of depth and mystery.

Questions

