



Penanganan Bahan Padat S1 Teknik Kimia FT UNS

1. Pendahuluan:
Mineral

Sperisa Distantina

Mineral:

alami, anorganik, padat,
berstruktur kristal, berkomposisi
kimia.

Sekitar 4400 mineral telah diberi
nama.

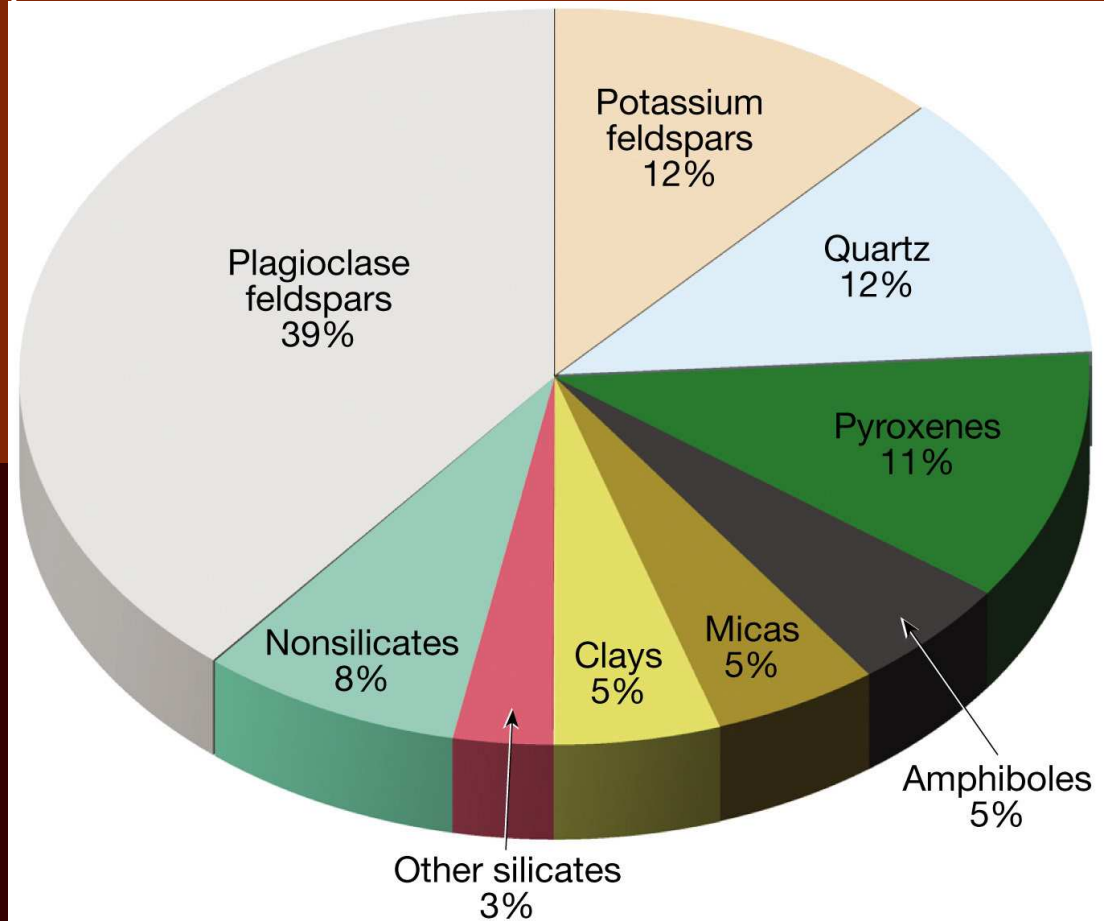
Quartz	SiO_2
Gold	Au
Gypsum	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
Diamond	C
Ice	H_2O

Mineral:

1. silikat, berisi SiO_4^{-4}

Si=silicon, bukan silicone

2. Non silikat



Mineral silikat


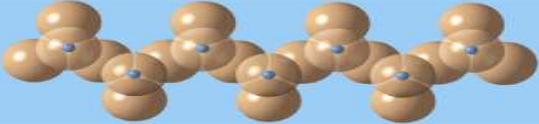
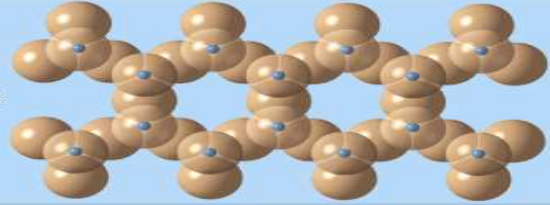
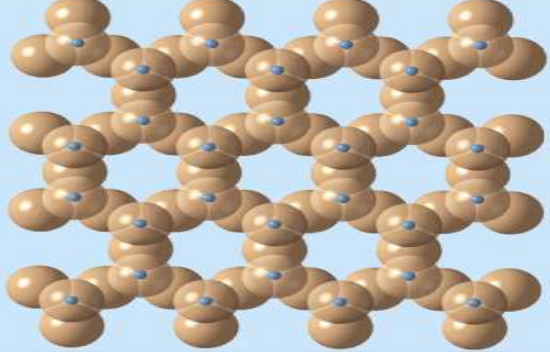
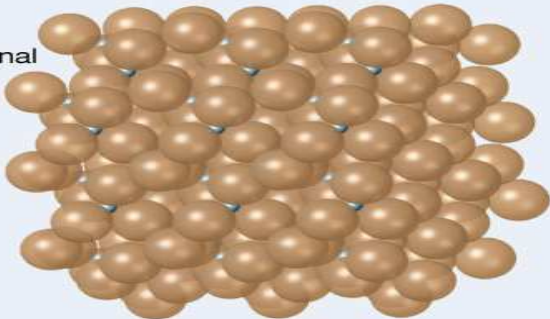
Mineral		Idealized Formula	Cleavage	Silicate Structure
Olivine		$(\text{Mg, Fe})_2\text{SiO}_4$	None	Single tetrahedron 
Pyroxene group (Augite)		$(\text{Mg, Fe})\text{SiO}_3$	Two planes at right angles	Single chains 
Amphibole group (Hornblende)		$\text{Ca}_2(\text{Fe, Mg})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	Two planes at 60° and 120°	Double chains 
Micas	Biotite	$\text{K}(\text{Mg, Fe})_3\text{AlSi}_3\text{O}_{10}(\text{OH})_2$	One plane	Sheets 
	Muscovite	$\text{KAl}_2(\text{AlSi}_3\text{O}_{10})(\text{OH})_2$		
Feldspars	Potassium feldspar (Orthoclase)	KAlSi_3O_8	Two planes at 90°	Three-dimensional networks 
	Plagioclase	$(\text{Ca, Na})\text{AlSi}_3\text{O}_8$		
Quartz		SiO_2	None	

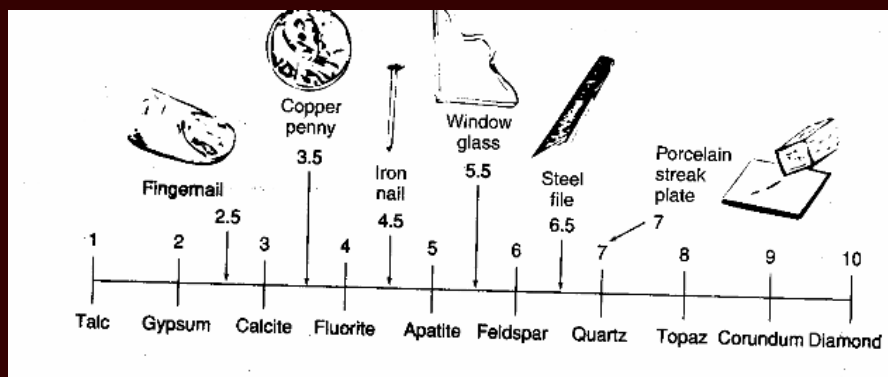
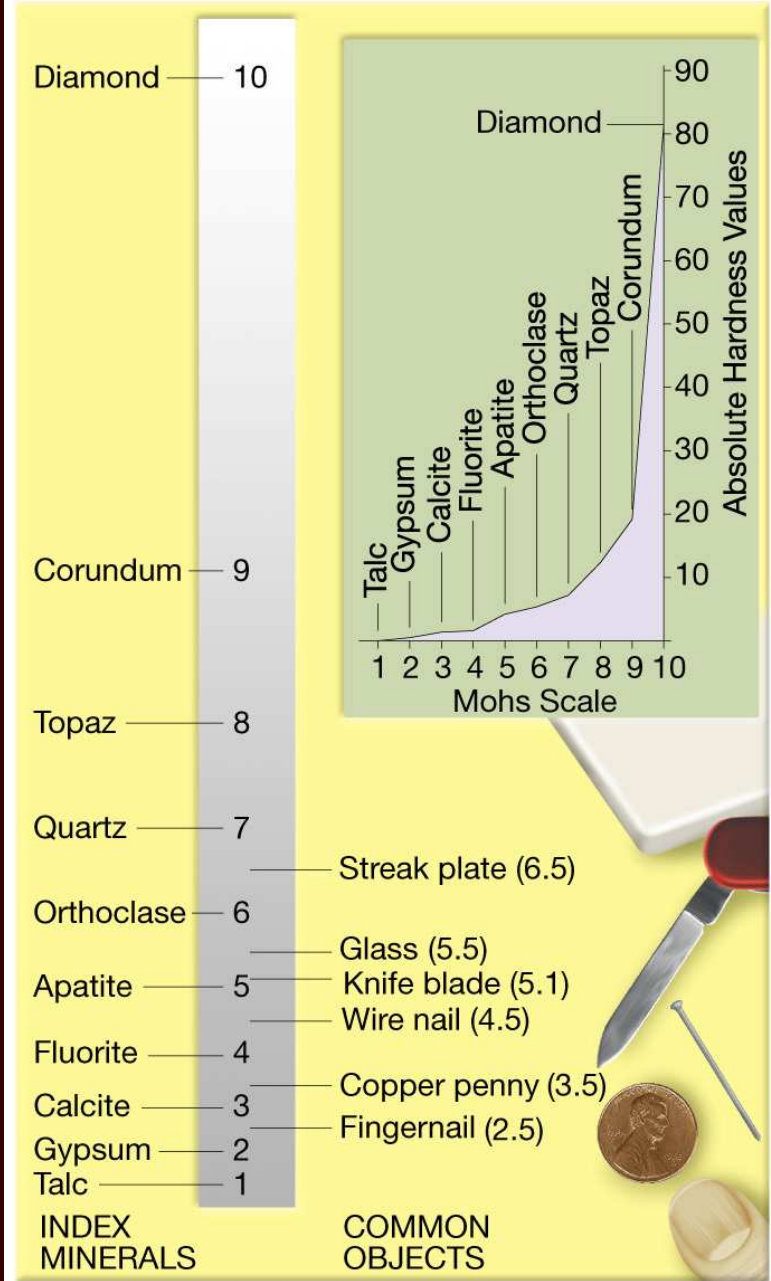
Table 1.1 Common nonsilicate mineral groups

Mineral Group	Name	Chemical Formula	Economic Use
Oxides	Hematite	Fe ₂ O ₃	Ore of iron, pigment
	Magnetite	Fe ₃ O ₄	Ore of iron
	Corundum	Al ₂ O ₃	Gemstone, abrasive
	Ice	H ₂ O	Solid form of water
Sulfides	Galena	PbS	Ore of lead
	Sphalerite	ZnS	Ore of zinc
	Pyrite	FeS ₂	Sulfuric acid production
	Chalcopyrite	CuFeS ₂	Ore of copper
	Cinnabar	HgS	Ore of mercury
Sulfates	Gypsum	CaSO ₄ · 2H ₂ O	Plaster
	Anhydrite	CaSO ₄	Plaster
	Barite	BaSO ₄	Drilling mud
Native elements	Gold	Au	Trade, jewelry
	Copper	Cu	Electrical conductor
	Diamond	C	Gemstone, abrasive
	Sulfur	S	Sulfa drugs, chemicals
	Graphite	C	Pencil lead, dry lubricant
	Silver	Ag	Jewelry, photograph
	Platinum	Pt	Catalyst
	Halides	Halite	NaCl
Fluorite		CaF ₂	Used in steelmaking
Sylvite		KCl	Fertilizer
Carbonates	Calcite	CaCO ₃	Portland cement, lime
	Dolomite	CaMg(CO ₃) ₂	Portland cement, lime

Kekerasan bahan : hardness, mohs' scale



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Orthoclase feldspar (6) digunakan sebagai bahan pemutih dalam pasta gigi,
sementara enamel gigi terdiri atas mineral apatite (5)

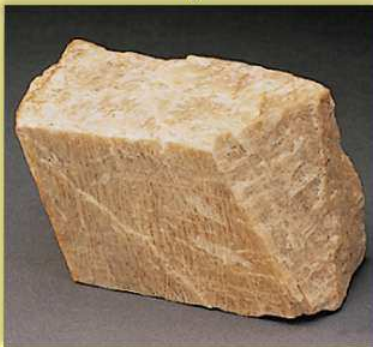
Granite
(Rock)



Quartz
(Mineral)



Hornblende
(Mineral)



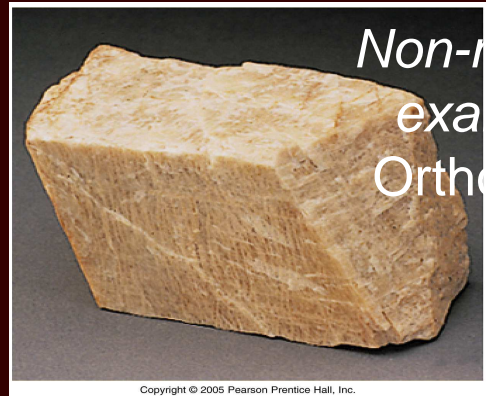
Feldspar
(Mineral)

Cubic Crystals of Pyrite



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Galena (PbS)



*Non-metallic
example:
Orthoclase*

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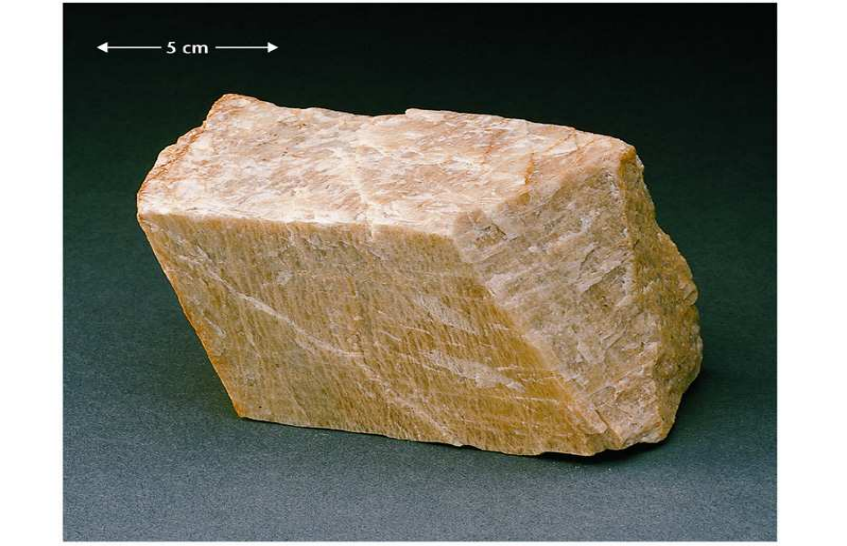
Quartz (SiO_2)



Fluorite, Halite, and Calcite



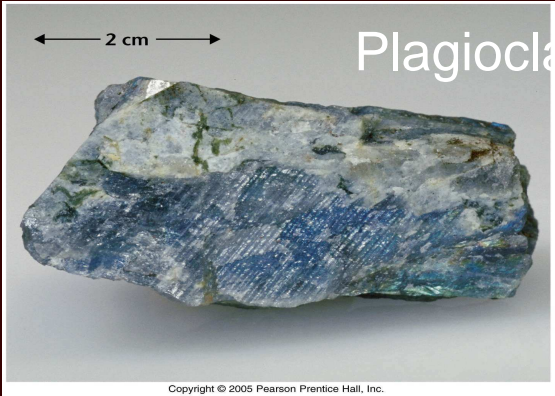
Potassium Feldspar



Native Copper

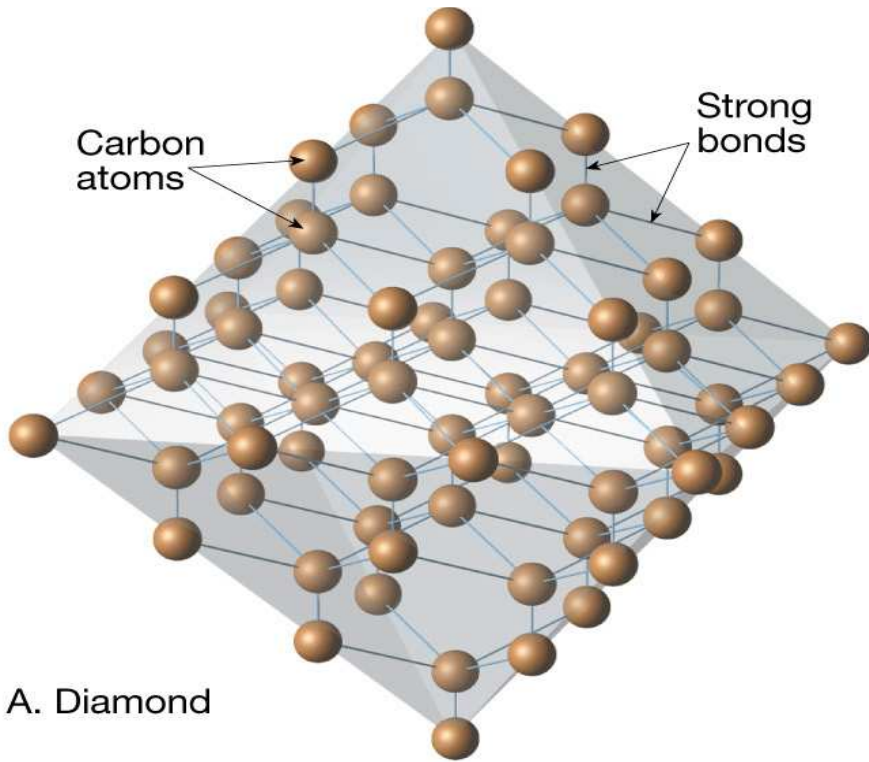


Plagioclase

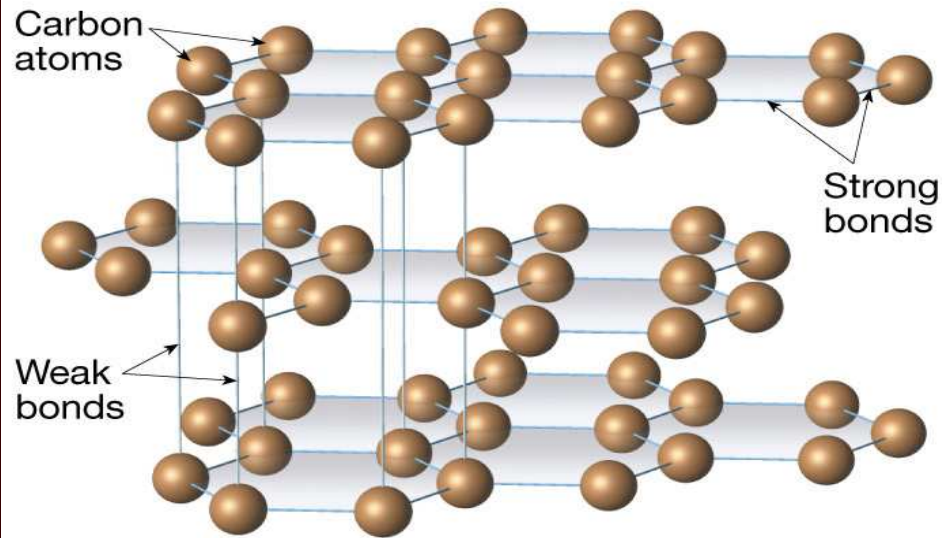


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Ca/Na-feldspar



Diamond



Graphite

■ **Corundum**



■ **Apatite**



■ **Serpentine**



■ **Talc**



■ **Stellerite**



■ **Biotite**



“depan”



“samping”



“atas”

Kristal Tanzanite (jenis dari mineral zoisite), memperlihatkan warna dari 3 arah.