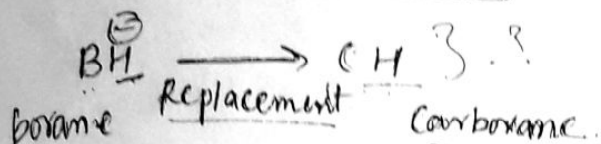
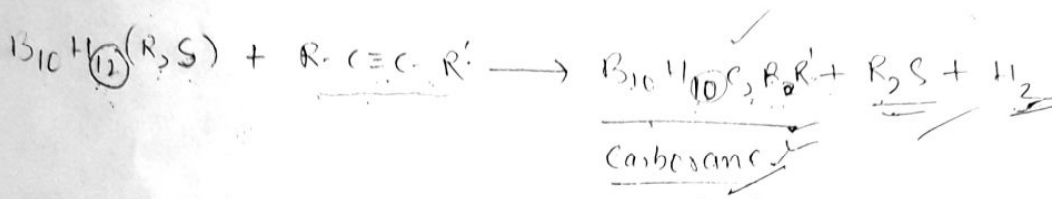


Carboranes (2005)

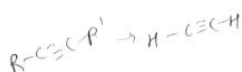
(12) 0952



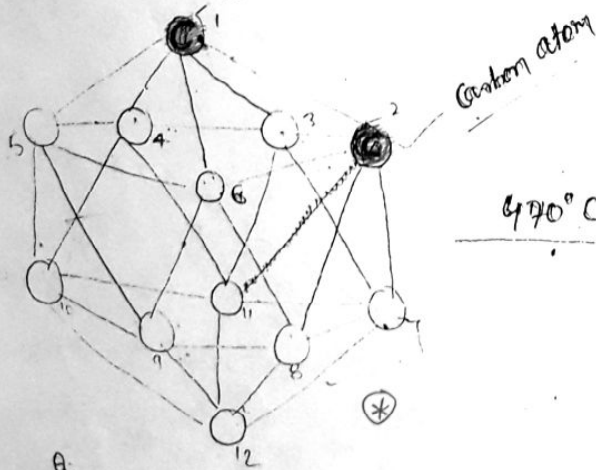
Prep $\rightarrow$ These are prepared from borane & alkynes in presence of dialkyl sulphide.



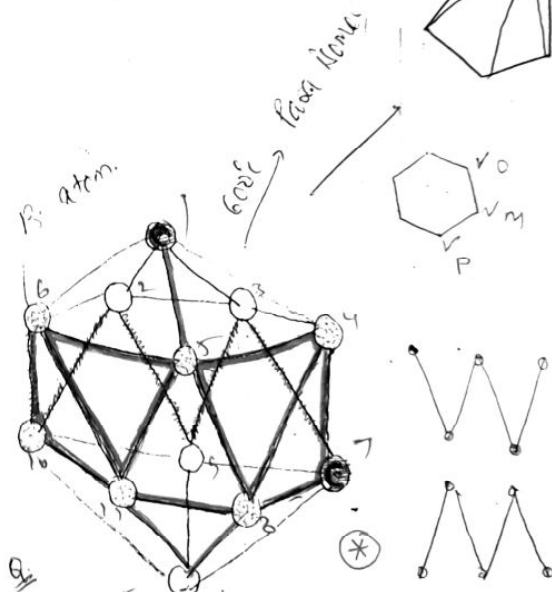
If $\text{R} = \text{R}' = \text{H}$



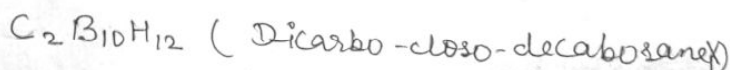
Structure



1,2-isomer (ortho isomer)

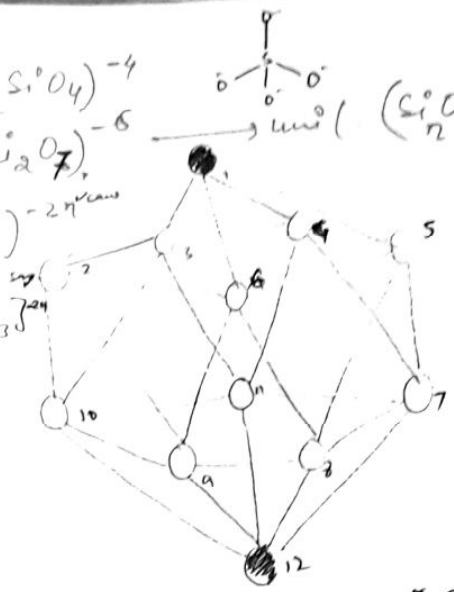


1,7-isomer (meta)



OR 1,2
1,7

Orthosilicate $(SiO_4)^{-4}$
 Pyrosilicate $(Si_2O_7)^{-6}$
 chain silicate $(Si_nO_{3n})^{-2n}$
 cyclic silicate $[Si_nO_3]^{2n-}$



structure of
 $C_{2}B_{10}H_{12}$

$SiO_2 \rightarrow \text{Silica}$
 $Si \rightarrow \text{Silicon}$

1,12- isomer (Para)

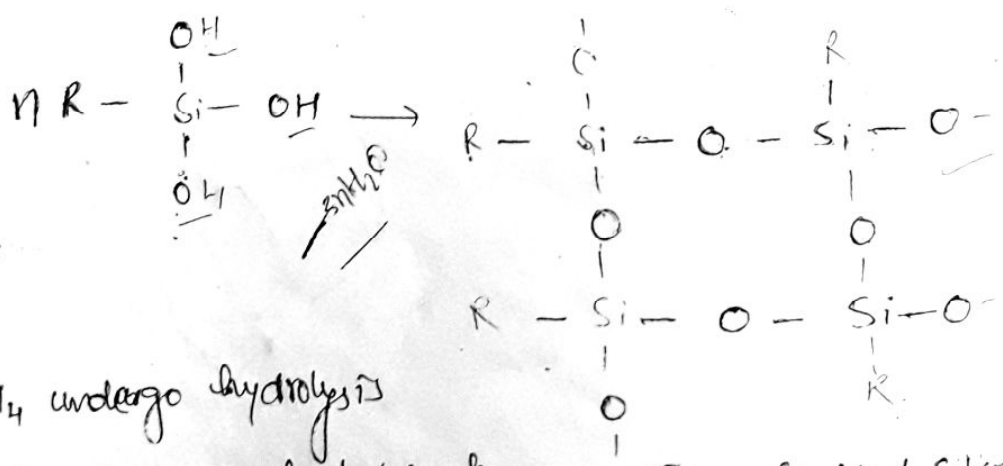
(*) $Si, O \rightarrow \text{silicates}$

(*) $Si, O, C \rightarrow \text{silicone}$ Silicones
 SiCO
 (compounds) or polymers containing alkyl-Si

R. SiCl₄ bonds of Si-O-Si bonds are called silicones (different from silicates)

hydrolysis होगा जबकी
 C-Cl bond नहीं होगा

(A) monosilane trichlorosilane



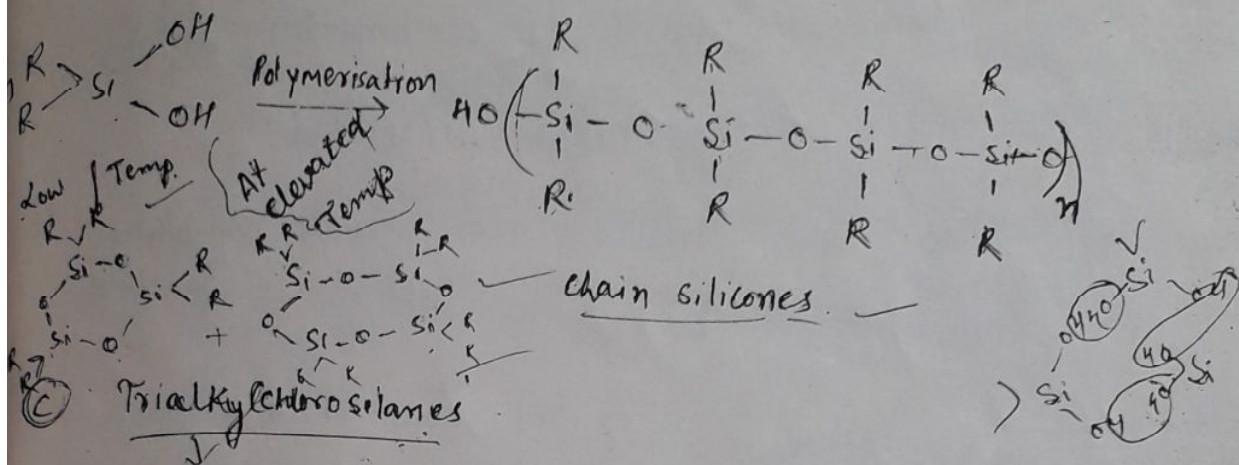
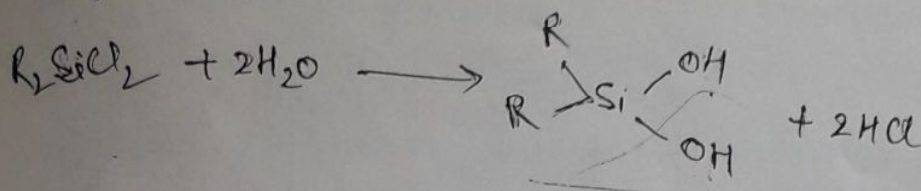
$SiCl_4$ undergo hydrolysis

due to presence of d-orbitals in Si & CCl_4 don't undergo hydrolysis due to absence of d-orbitals in C

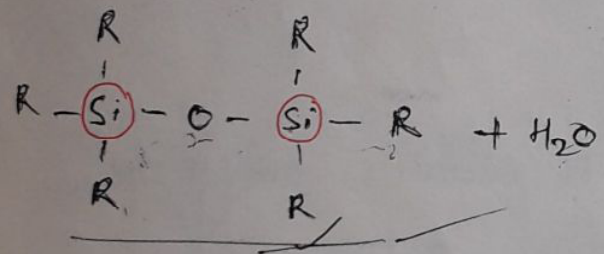
Cross linked Silicones

(B) Dialkyldichlorosilanes

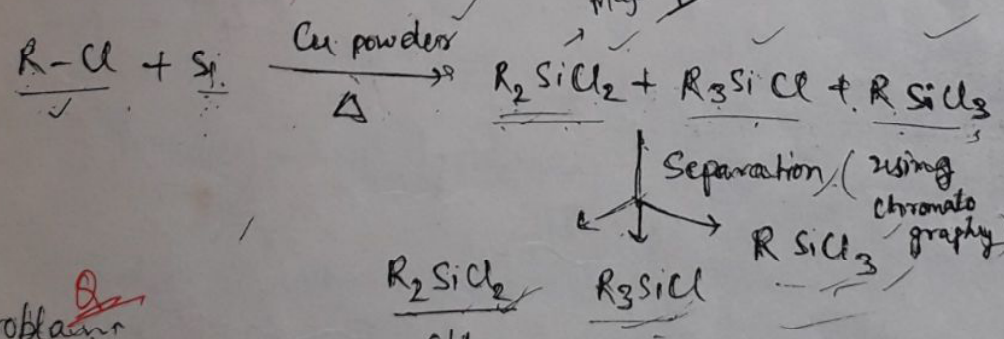
(15)



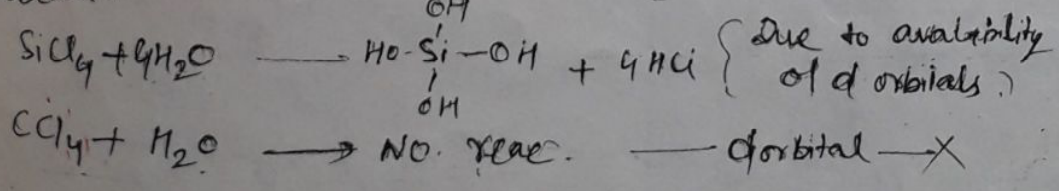
(C) Trialkylchlorosilanes



Prep. of alkyl chlorosilanes



Problem



1891

1891

1891

1891

1891

1891

1891

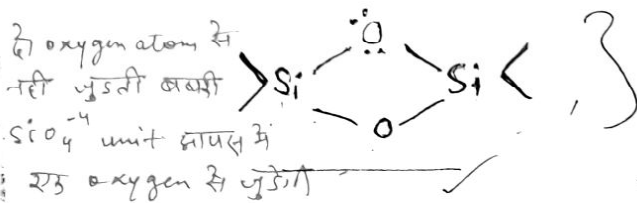
Silicates

- Pyrosilicate $\text{Si}_2\text{O}_7^{6-}$
- chain silicate $(\text{SiO}_3)_n^{2n-}$
- ring silicate
- silicate

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Such compound, which contains discrete SiO_4^{-4} (tetrahedral) units or combination of these units are called silicates.

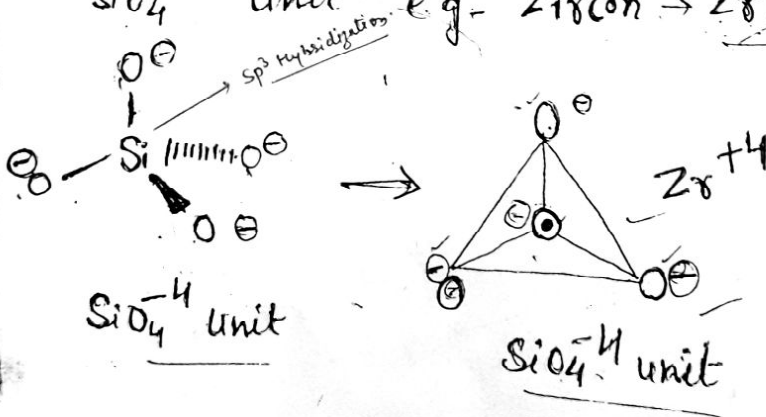
Two such units are never combined in following way



It means these silicates will not exist.

Classification →

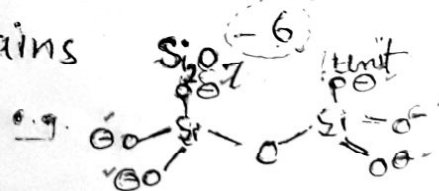
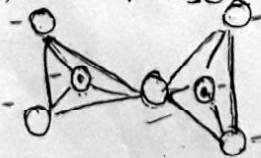
- ① Orthosilicates → These contains only one SiO_4^{-4} unit e.g. Zircon → $\text{Zr}[\text{SiO}_4]$



(-4)

- ② Pyrosilicates → These contains

e.g. Thortveitite $\text{Si}_2\text{O}_7^{6-}$



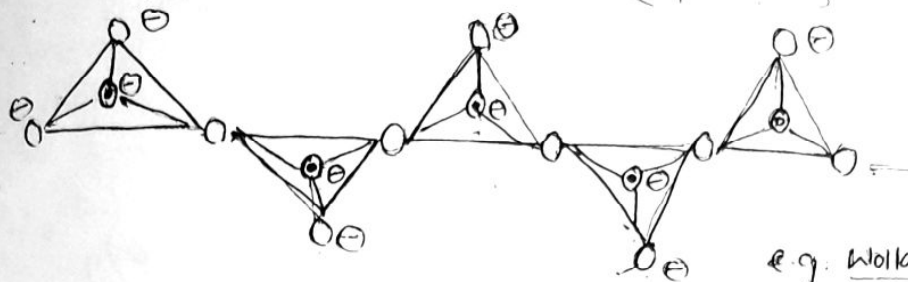
(-6)

• → S
○ → O

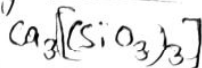
$\text{V} = 6$ $\frac{\text{द्वि ३१ oxygen}}{\text{२३ valency}}$

c) Chain silicates $\rightarrow$ General formula.

Single chain $\rightarrow (\text{SiO}_3)_n^{-2n}$ { Pyroxenes }

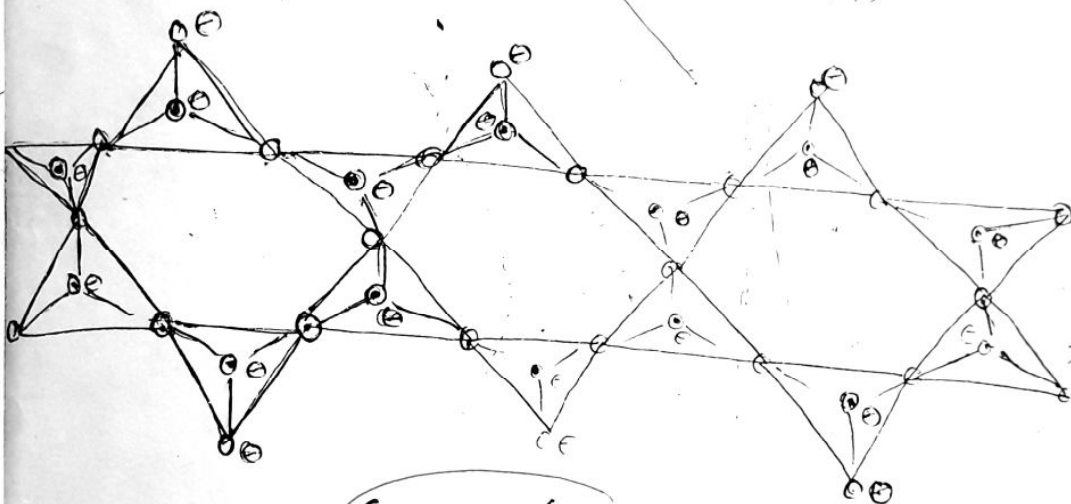


e.g. Wollastonite

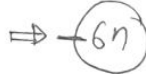
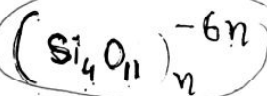


containing double chains

{ Amphiboles }



Amphiboles

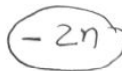


e.g. Tremolite $\rightarrow \text{Ca}_2\text{Mg}_5(\text{Si}_4\text{O}_{11})_2(\text{OH})_2$

h) Cyclic or Ring silicates

CY

General formula $(\text{SiO}_3)_n^{-2n}$



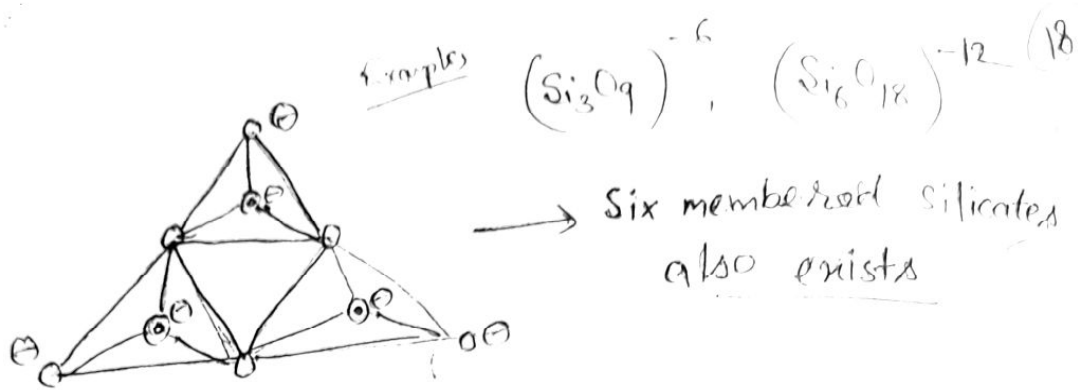
Q. net CO_2 gas, SiO_2 solid why?

as CO_2

$\downarrow$
vanderwaal bond
 $\downarrow$
Linear.

SiO_2

$\downarrow$
three dimension
al. Network of
covalent bond
available of
vacant d
orbital



S (5) Sheet silicates — General formula $(\text{Si}_2\text{O}_5)^{-2n}$
 e.g. Kaolinite → $\text{Al}_2(\text{OH})_4[\text{Si}_2\text{O}_5]$

T (6) Three dimensional silicates — Gen. formula SiO_2
 e.g. (quartz, tridymite) — SiO_2
crystalline

Home work →

6

(6)

