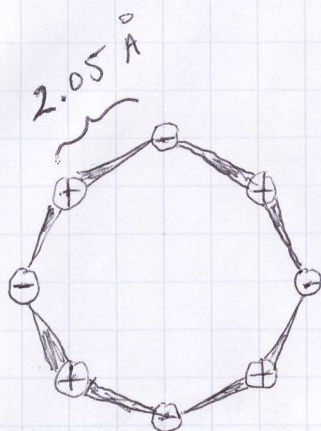
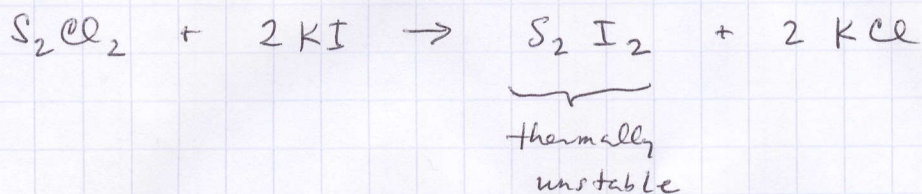


S_8



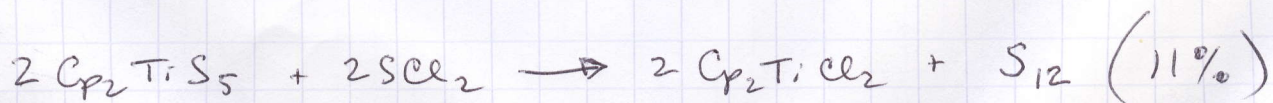
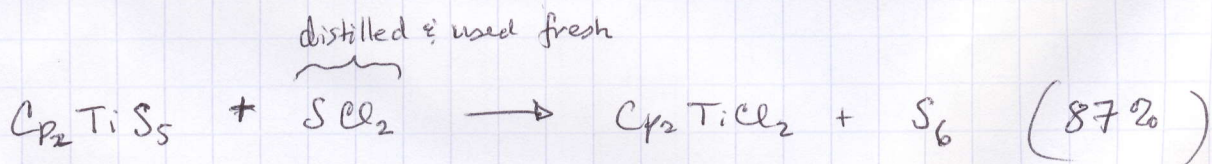
Sulfur rings known
 $n = 6-20$

S_6



S_6 obtained in 36% yield via fractional pptn.

S_6/S_{12}



S_8

Commercially available sulfur has S_7 impurity responsible for the bright yellow color.

pure S_8 is pale yellow-green.

volcanic sulfur may also contain S_7 Se impurity.

S_{∞}

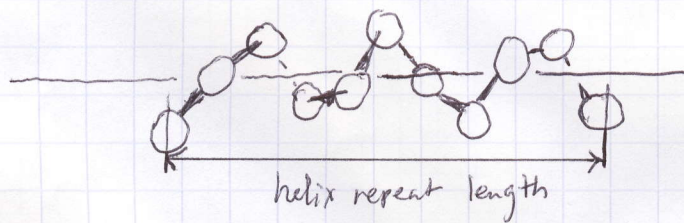
"Plastic Sulfur": liquid sulfur is quenched

from 350°C to 20°C in cold water

fibers obtained are stretched in axis direction.

helical polymeric sulfur chains having

pockets filled with S_8 molecules.



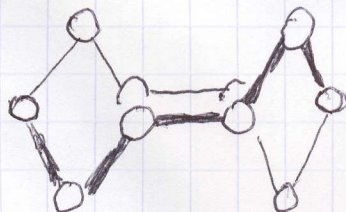
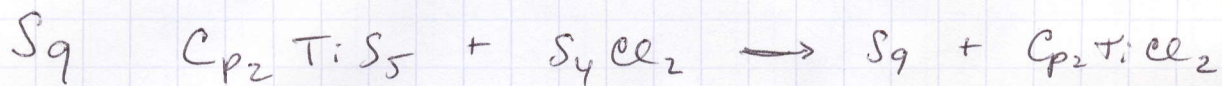
10 S atoms per repeat

S_7



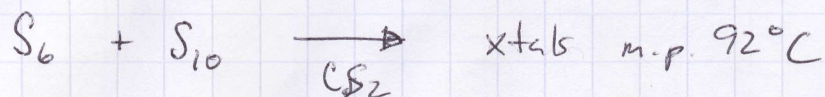
isolated yield 23%

S_7 is unstable; store below $-50^\circ C$



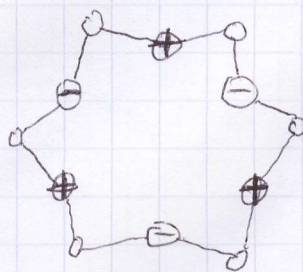
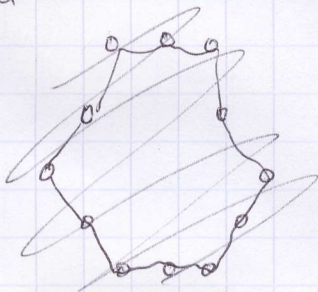
D_2

$S_6 \cdot S_{10}$

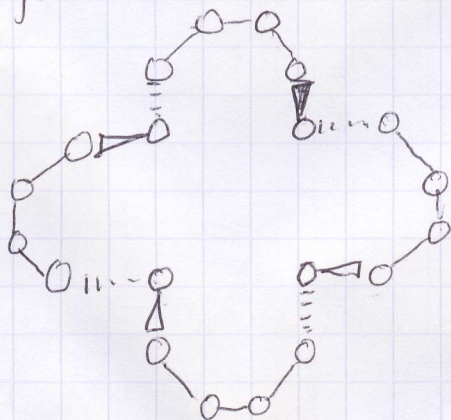


Only solid allotrope of an element containing molecules
of different sizes!

S_{12} D_{3d}

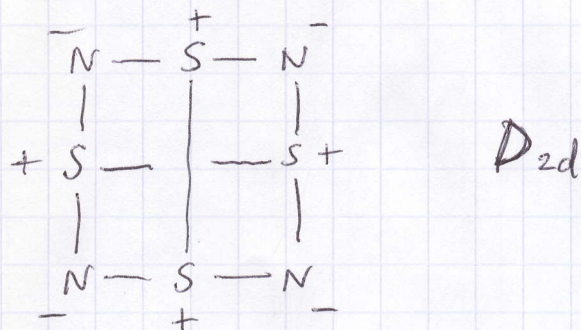


S_{20} Eicosasulfur



D_4

Classical
Lewis Structure for S_4N_4 :



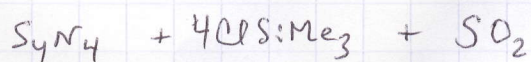
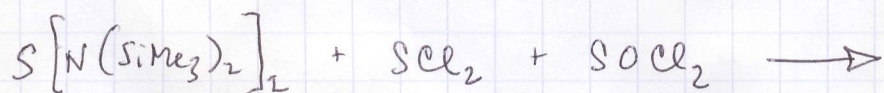
Modern
Synthesis of S_4N_4 : (Inorg Synth 33, 196-199)

^{14}N NMR -256 ppm.

IR: 928 (vs) 768 (w) 727 (m) 700 (vs) 630 (w) 553 (vs) 548 (w)
529 (w, n)

8 vibs reported, $3N-6 = 18$ possible.

in D_{2d} , IR active vibs are $B_2 + E$



procedure with only volatile byproducts!