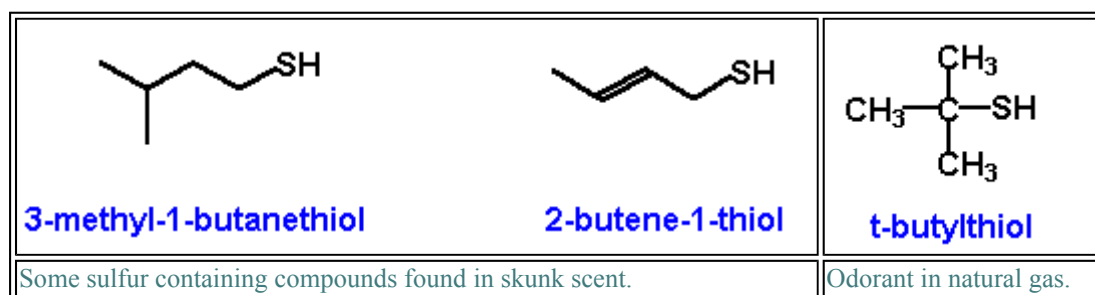


Thiols

Thiols are sulfur containing compounds analogous to alcohols. The obvious physical property of thiols is their extremely unpleasant odor. Skunk scent is a mixture of thiols. Trace amounts of thiols are added to the odorless natural gas so leaks can be detected before hazardous concentrations of methane accumulate.



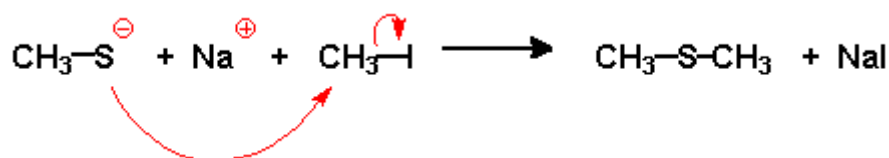
Chemical Properties of Thiols

Synthesis of thiol ethers

Thiols, unlike alcohols, are weak acids. Thiols react with strong bases in aqueous solutions to form salts.



Thiol anions are very good nucleophiles and participate in $\text{S}_{\text{N}}2$ reactions to form thiol ethers. This reaction is analogous to the Williamson ether synthesis.



Oxidation of thiols to disulfides

Thiols can be readily oxidized by molecular oxygen in the atmosphere or hydrogen peroxide to disulfides. Disulfides can be reduced back to thiols. This reaction has very important consequences in biochemical reactions. A familiar example of this chemistry is found in permanent hair waves.

