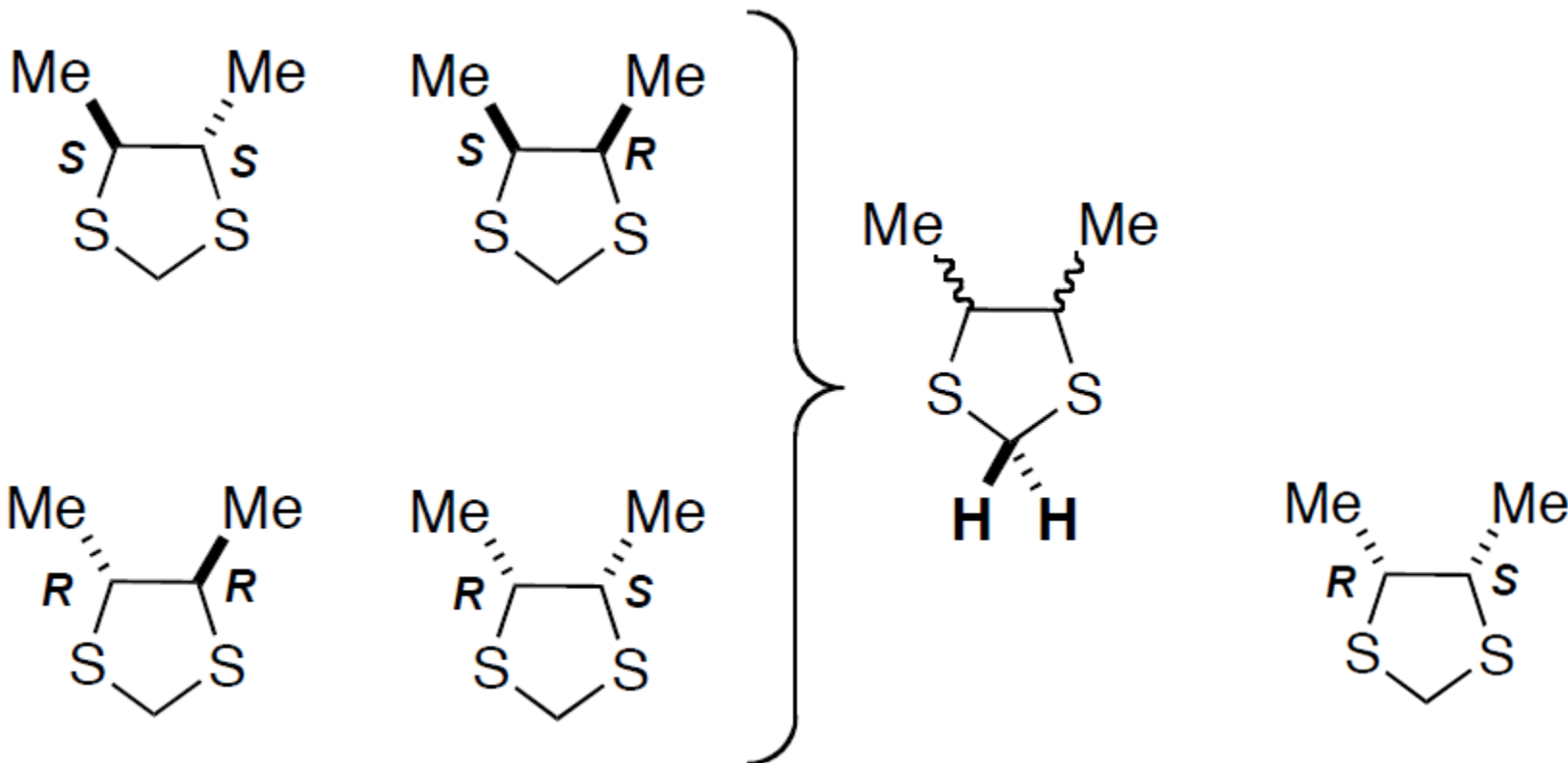


Determining Stereochemistry by $^1\text{H-NMR}$ Spectroscopy

$^1\text{H-NMR}$ spectroscopy can be used to differentiate the **diastereomers** of the cyclic thioacetal shown below in a reasonably straightforward manner.

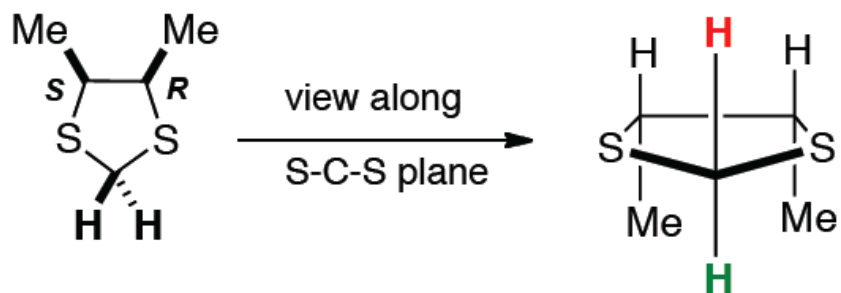


Though not necessarily obvious in flat depictions of these species, they can be differentiated by their number of chemically non-equivalent ^1H -atom environments.

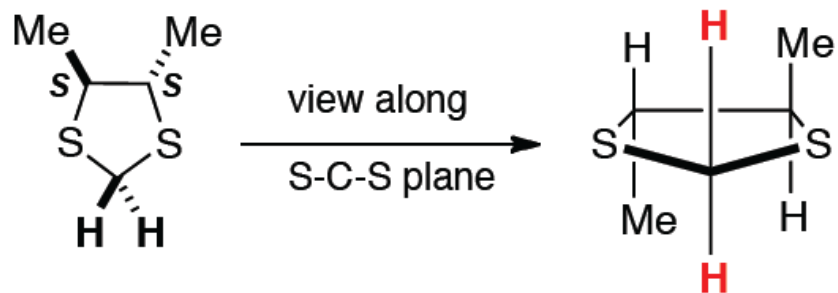
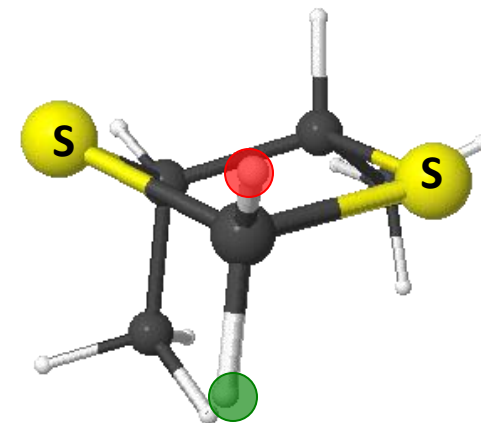
Are the **methylene** ($-\text{CH}_2-$) ^1H -atoms equivalent or different in each of the species depicted?

Determining Stereochemistry by $^1\text{H-NMR}$ Spectroscopy

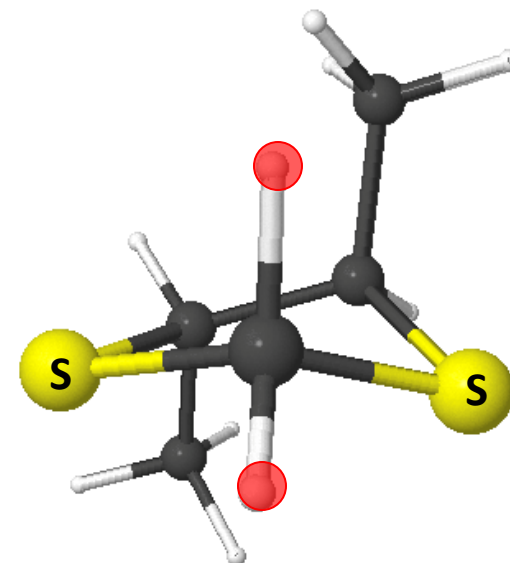
Let us consider the S,R and S,S stereoisomers.



**methylene protons
are DIFFERENT**

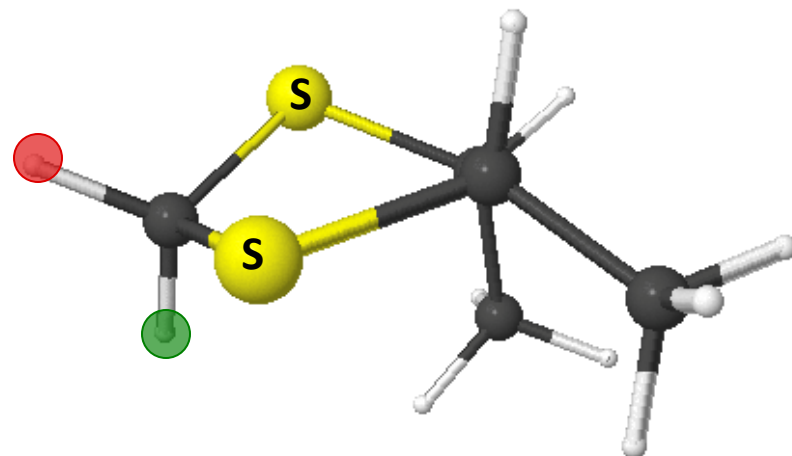
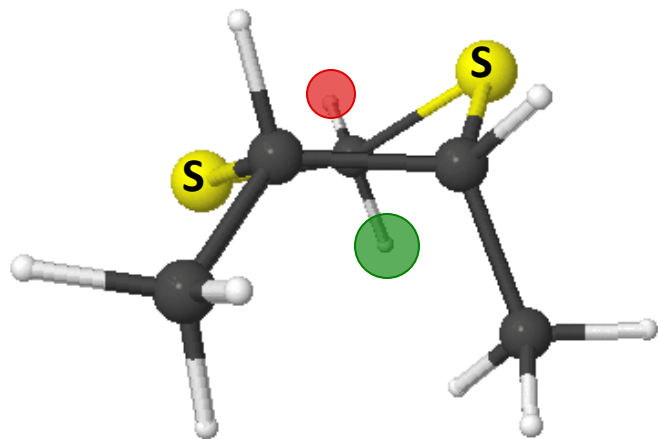
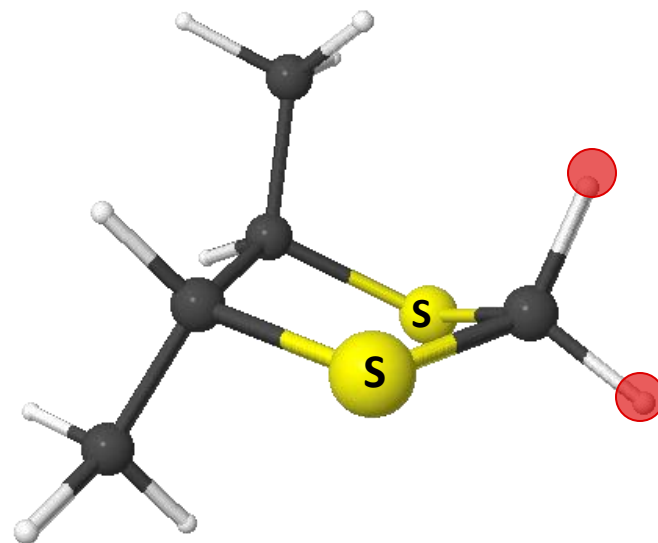
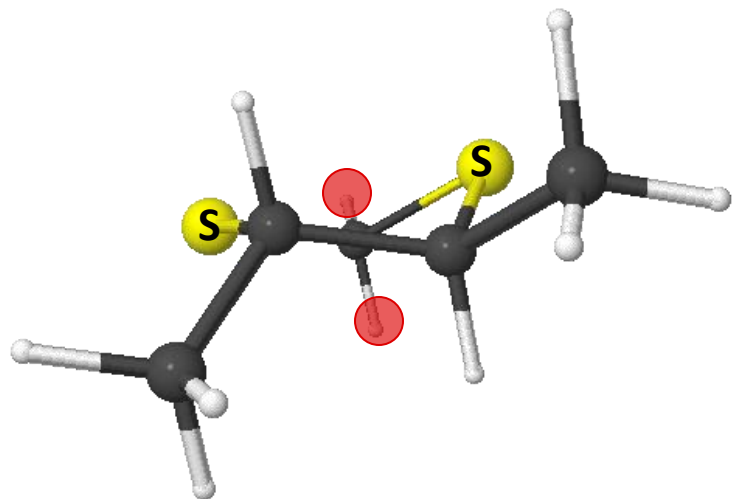


**methylene protons
are EQUIVALENT**



Determining Stereochemistry by $^1\text{H-NMR}$ Spectroscopy

Let us consider the S,R and S,S from a different angle.



Examining molecules in WebMO or with a model kit is very helpful in this regard.