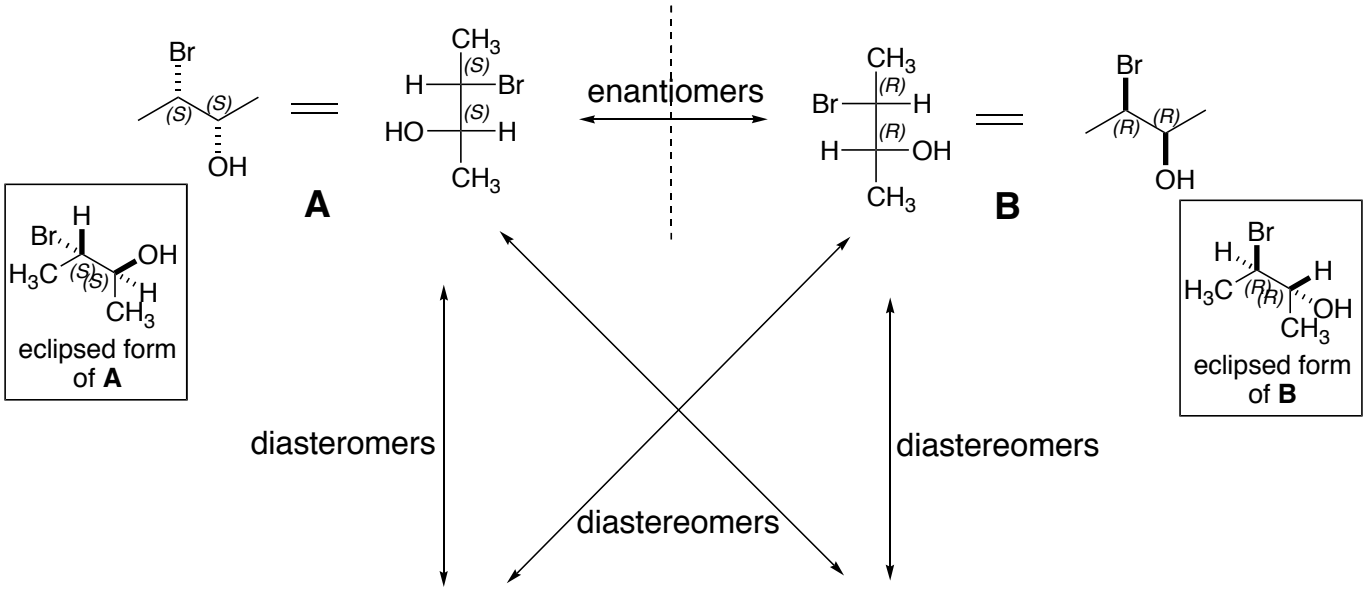
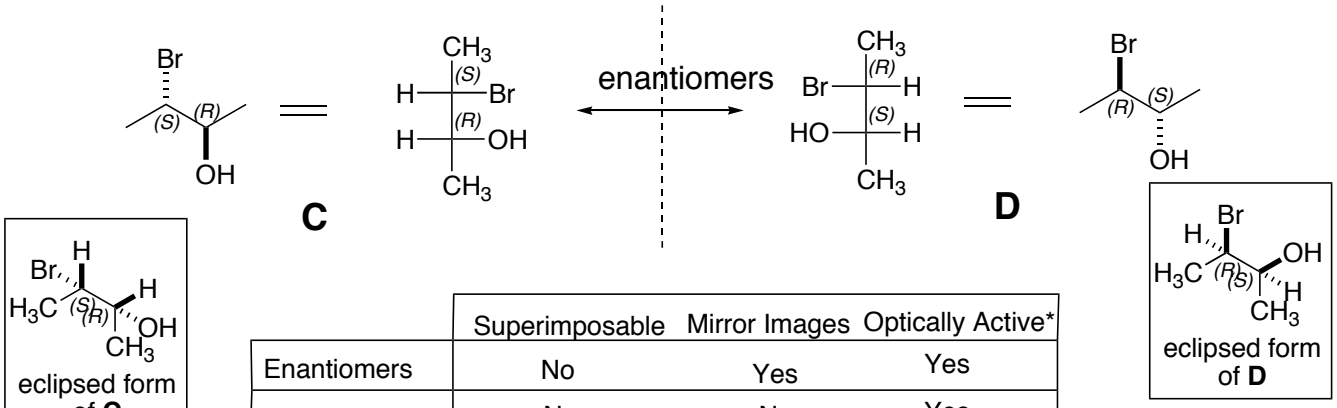
2 Different Stereocenters





	Superimposable	Mirror Images	Optically Active*
Enantiomers	No	Yes	Yes
Diastereomers	No	No	Yes
Meso	Yes	Yes	No
Identical	Yes	No	Yes

*as pure compounds

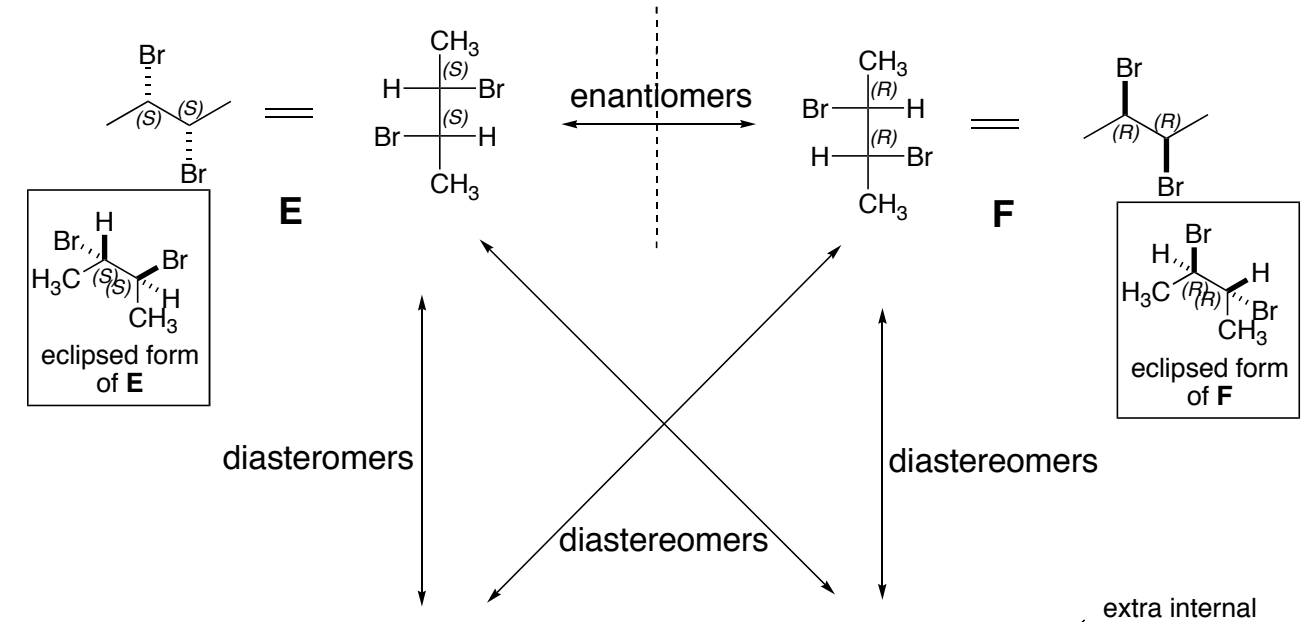
If we had a mixture of the above compounds and picked out two random molecules we would get three different possibilities.

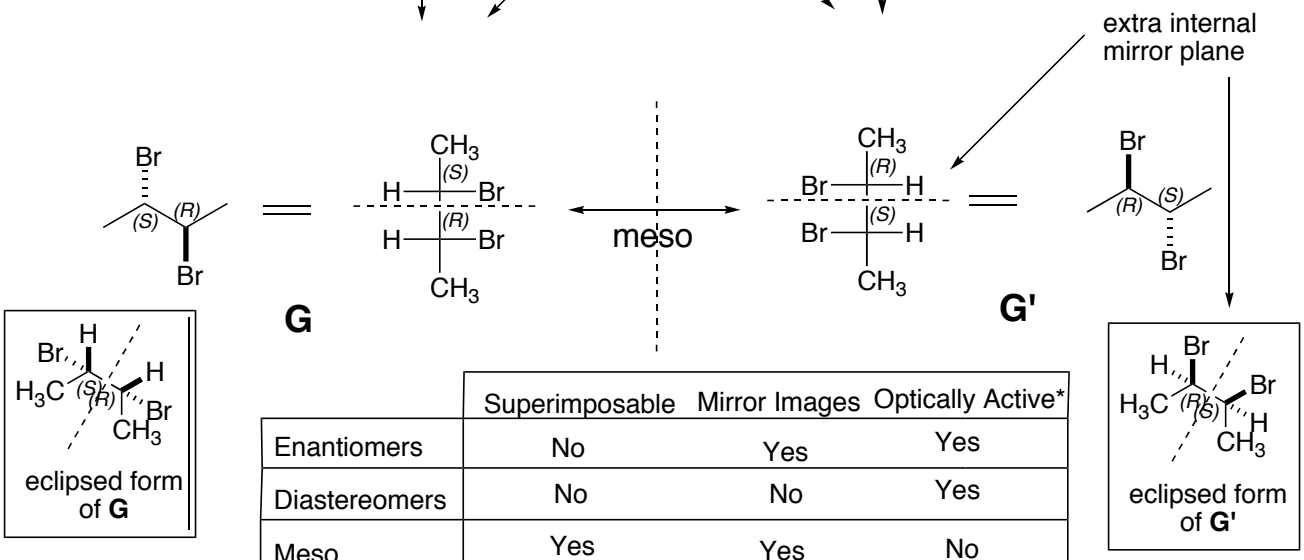
A/B and C/D are non-superimposible exact mirror images: ENANTIOMERS

A/C, B/C, A/D, B/D are non-superimposable but are not mirror images: DIASTEREOMERS

A/A, B/B, C/C, D/D are superimposable but not mirror images:IDENTICAL

2 Identical Stereocenters





	Superimposable	Mirror Images	Optically Active*
Enantiomers	No	Yes	Yes
Diastereomers	No	No	Yes
Meso	Yes	Yes	No
Identical	Yes	No	Yes

*as pure compounds

If we had a mixture of the above compounds and picked out two random molecules we would get four different possibilities.

E/F are non-superimposible exact mirror images: ENANTIOMERS

E/G, E/G', F/G, F/G' are non-superimposable but are not mirror images: DIASTEREOMERS

E/E, F/F are superimposable but not mirror images: IDENTICAL

G/G', G/G, G'/G' are superimposable and are mirror images, this is a special case where two molecules are exactly the same and have an internal mirror plane and are MESO.

By. Dr. Sarah Lievens, University of California, Davis (Chem 118A) Jan. 2009