

Enantiomers and Diastereomers

Enantiomers are stereoisomers that are nonsuperimposable mirror images of one another. A pair of enantiomers has the exact same set of physical properties (bp, mp, viscosity, solubility, refractivity index etc...) with one exception; rotation of plane polarized light (PPL) or the specific rotation $[\alpha]_D$. Enantiomers rotate by the same magnitude but with opposite direction. One enantiomer rotates PPL by certain degrees to the right (Dextrorotatory), the mirror image rotates PPL by the same degree to the left (Levorotatory). Therefore, if the specific rotation, $[\alpha]_D$, of an enantiomer is $+y$, $[\alpha]_D$ of the other enantiomer must be $-y$.

Diastereomers are stereoisomers that are not mirror images of one another. They have completely different physical properties (bp, mp, viscosity, solubility, refractivity index, rotation of PPL etc...). The specific rotation, $[\alpha]_D$, of diastereomers are not related because diastereomers are not related with each other.