

An Oxidation-Reduction Scheme: Borneol, Camphor, Isoborneol. Weeks 1 and 2

Prelab Exercise (worth 10 points!)

1. (-)-Borneol is the form of borneol that you will be using and is therefore chiral. Find and show the correct structure for (-)-borneol, its IUPAC name (including the configuration for all three stereocenters), the melting point for the exact isomer of borneol that you will be using, and find the melting point of *racemic* borneol.
2. Since you are starting with (-)-borneol, your camphor product should only be one enantiomer. Find and show the correct structure and the melting point for the camphor product that is produced from the (-) isomer of borneol and compare it to the melting point for *racemic* camphor.
3. Find and show the correct structure for the isoborneol product that should be the eventual product starting from (-)-borneol. Provide the mp and IUPAC name for the optically active product (including stereochemistry) that you will obtain in this experiment and also find the mp for the *racemic* version.
4. Show the entire sequence of reactions starting from (-)-borneol to camphor to isoborneol with the correct stereochemistry.
5. Predict the composition of your product, isoborneol (hint: read the essay on reduction). Is it only isoborneol or is another product produced as well? This is important to know before you do the GC analysis.