6.7: In-Text References

1. NaH is synthesized by the reaction of sodium with hydrogen—a redox reaction. It is an ionic compound consisting of Na^+ and H^- (hydride) ions; hydride cannot be produced by deprotonating $Na\quad H\qquad_2$. ↵
2. The pK_a of NaH_3 (the conjugate acid of $NaH_2{}^-$) is 33 ↵
3. To use the oxidation number method, we must remember that H is less electronegative than C; so in CH_4, the ON ofcarbon is –4 and each H is +1. (This is confusing since we usually consider $C-H$ bonds as non-polar). In CO_2, each O is –2 and the C is +4. Therefore, in CO_2 the carbon is in a higher oxidation state than in CH_4↵
4. For more information about green chemistry see: https://www.epa.gov/greenchemistry ↵
5. It is not necessary here to provide a long list of such reagents since many of them are complex, but it is important to know that there are alternatives should you ever need to oxidize an alcohol. ↵
6. The formation of the analogous peroxide $O-O$ bond (Bond Dissociation Energy $140\ kJ/mol$) is even less likely, this bond is even weaker than $S-S$ (BDE $230\ kJ/mol$). ↵
7. $NaBH_4$ and $LiAlH_4$ both contain a group III element (B, \(Al) here found in the form of the Lewis acid-base complex BH_4 or AlH_4. They are sources of Hydride ion, as shown above. $LiAlH_4$ is more reactive than $NaBH_4$. ↵
8. Victor Grignard won a Nobel prize for this discovery: https://en.Wikipedia.org/wiki/Victor_Grignard. ↵
9. The reaction mechanism is a little more complex than this—actually occurring via one electron transfer—but the result is the same. ↵