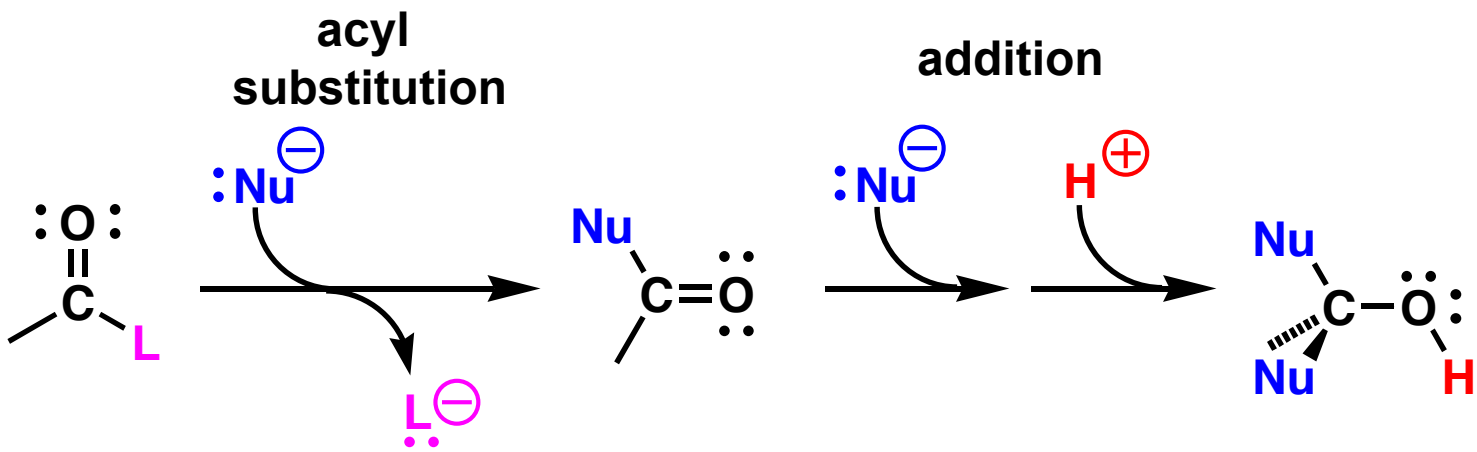
Acyl Substitution Followed by Addition



The carbonyl product resulting from acyl substitution may be susceptible to further attack by the nucleophile. These sequential processes follow pathways that have previously been discussed. Whenever substitution is slower than addition, stopping the reaction at the end of the substitution reaction can be nearly impossible. The result will be two equivalents of nucleophile attaching to the carbonyl carbon (the first by substitution, the second by addition). In general, the substitution-addition sequence takes place for very strong nucleophiles such as hydrides and Grignard reagents. A source of H^+ must intentionally be added by the chemist to quench the reaction after formation of the addition adduct (i.e., in chemical equations this is often written in "H+ workup").

Examples of Acyl Substitution Followed by Addition