



Selective Molecular Transformation by Bifunctional Reagent and Catalyst

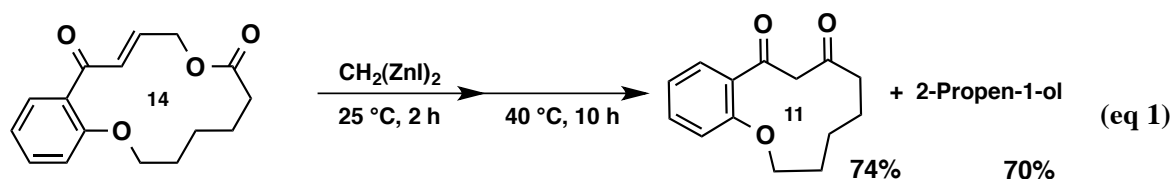
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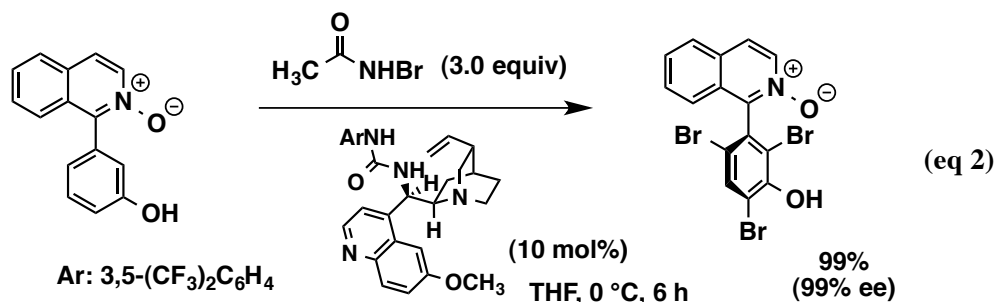
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When organic chemists develop the new reactions, they should always be conscious of selectivity and efficiency. To realize the high performance in molecular transformations, we have focused on bifunctional reagent and catalyst. For example, bis(iodozinc)methane, that has two zinc atoms on the methylene carbon, performs unpredictable transformations using both of dianionic and bis Lewis acidic characters (eq 1).



We also developed several enantioselective reaction using bifunctional organocatalyst as shown in eq 2. This thiourea-amine catalyst derived from chincona alkaloid interacts with the substrate via acid-base interaction. In this complexation, the aggregate defines the rotational angle around the axis between two areny planes, and gave the one axial enantiomer selectively via bromination.

Several molecular transformations using bifunctional reagent and catalyst will be shown and discussed based on the mechanistic work.



References

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- (2) Miyaji, R.; Asano, K.; Matsubara, S. *J. Am. Chem. Soc.* **2015**, *137*, 6766.