This thesis deals with an enantioselective synthesis of cyclic compounds by using a combination of organocatalysis and transition metal catalysis. The thesis deals mainly with usage of aminocatalyst for activation of aldehydes and copper catalyst for activation of terminal triple bond.

The first part is focused on the preparation of starting compounds for cyclizations (α-oxoesters, α-substituted nitroalkanes and α-substituted aldehydes). The second part concerns carbocyclization itself and optimization of reaction conditions to achieve highly stereoselective reaction.