

Gold Catalysis for Organic Synthesis and Bioconjugation

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Gold catalysis has emerged into the forefront of transition metal catalysis. Owing to their high reactivity, excellent selectivity and remarkable insensitivity to air/moisture reaction conditions, gold catalysts are very active for a variety of novel organic transformations that would not be possible by using other transition metal catalysts. Bioconjugation allows covalent attachment of biophysical probes to oligosaccharides, peptides, and proteins aiming to study complex biological systems. However, biomolecule modification is a challenging task owing to a number of strict requirements including completely unprotected functionalities, aqueous medium, narrow pH (6–8) and temperature (4–37 °C) range, and low biomolecule concentration (below 100 μM). In view of the unique advantages of gold catalysis, our long-standing goal is to develop gold catalysis for organic synthesis¹ and conduct application studies on bioconjugation.² Here we present our effort on gold-catalyzed organic transformations and recent work on gold-catalyzed amide synthesis from aldehydes and amines in aqueous medium, mechanistic studies, and application on selective modification of oligosaccharides.³

References

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