Title:	Exploring the Vinylogous conjugate-addition and radical reactions of para-quinone methides
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Abstract:	Abstract: Heterocycles are the fundamental building blocks of organic chemistry, due to their numerous applications in the realms of biology, chemistry, and pharmaceuticals, etc. Heterocyclic compounds carry out a number of significant tasks in nature, medicine, technology, and other fields. In this regard, oxygen, nitrogen and sulfur- based heterocycles are found to have impressive pharmacological activities such as anti-cancer, anti-antifungal, anti-asthmatic, etc. The N-, O-, S-based heterocyclic frameworks have become a rapidly developing and increasingly active topic owing to the overwhelming advantages of N-, O- and S-containing drugs in the medicinal chemistry. So far, many research group have become interested in their syntheses and, numerous synthetic approaches have been documented to access these heterocycles. The present research work involves the synthesis of oxygen, sulfur, and nitrogen-containing heterocycles from para-quinone methides under metal-free conditions. It also includes the C-C reductive dimerization para-quinone methides. The thesis is divided into four chapters. Chapter 1 describes the general introduction to para-quinone methides and also the reactivity profile of structurally modified para-quinone methides. Chapter 2 describes an acid-mediated synthesis of 4H- chromen-4-ones from para-quinone methides and 2-hydroxyphenyl-substituted enaminones. Chapter 3 deals with the one-pot synthesis of xanthene, thioxanthene, and 10H-indolo[1,2-a]indole-based heterocycles using functionalized para-quinone methides. Chapter 4 deals with the SmI 2 -catalyzed reductive dimerization of para-quinone methides.
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