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Highly Reactive Cyclic Allenes: Exotic Building Blocks for Construction of Complex Compounds

While acyclic allenes adopt a linear geometry with the terminal groups oriented in a perpendicular relationship, allenes enclosed in small rings experience severe bond angle distortion. For example, the 1,2-cyclohexadiene contains a bond angle of 133° at the central allene carbon, a serious deviation from the usual 180°. These bonding perturbations provoke high reactivity in cyclic allenes, and their short lifetime makes them impossible to isolate. However, proper design of trapping processes can permit their use in unique reactions that form one or more strategic bonds, leading to functionalized cyclic or polycyclic products. This seminar will focus on recent advances in synthetic methods involving generation and reactions of cyclic allenes, including enantioselective formation and trapping, and transition metal-modified reactivity.

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