

Transition Metal Quinone Carbene Complexes. Structures and Reactivity

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Transition metal catalyzed carbene transfer reactions are powerful synthetic tool in organic synthesis. In recent years, diazo quinones have emerged as new carbene source for carbene transfer and insertion reactions. To better understand the bonding nature and reactivity of quinone-carbenes, we synthesized and characterized a series of ruthenium porphyrins containing axial quinone carbene ligand. The quinone-carbene ligands of these ruthenium porphyrin complexes exhibit quinonoid structure according to the X-ray crystal structures. They can react with nitrosobenzene to form nitron compounds and undergo hydrogen atom transfer (HAT) reactions. Mechanistic studies and Density Functional Theory Calculations on the reactions of these ruthenium porphyrin complexes have also been undertaken.

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