Ruthenium-Catalyzed Lemieux–Johnson-Type Oxidation of Olefins

Significance: The authors report a ruthenium-based catalyst for the Lemieux–Johnson-type oxidation of olefins, providing, after carbon–carbon bond cleavage, the corresponding aldehydes or ketones. The key feature is the designed ruthenium complex which combines a dynamic donor ability, originating from the bisPYA ligand, with highly redox active ruthenium.

Comment: This method outperforms most of the state-of-the-art systems due to the exceptionally efficient ruthenium catalyst. This metal complex can achieve turnover frequencies of 1,000,000 h⁻¹, turnover numbers of several millions and is readily prepared in a four-step synthesis utilizing commercially available starting materials.

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