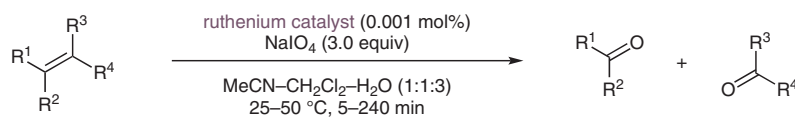


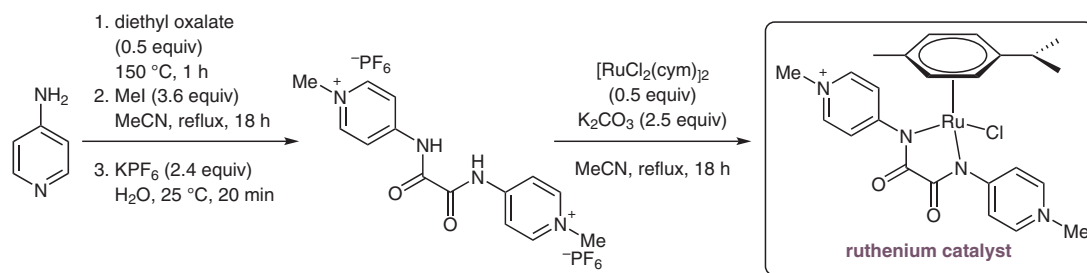
## Ruthenium-Catalyzed Lemieux–Johnson-Type Oxidation of Olefins



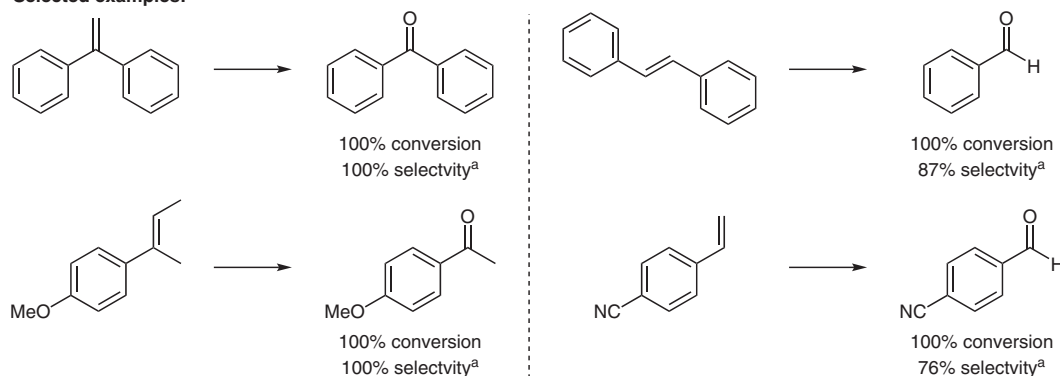
R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> = Alk, Ar

>15 examples

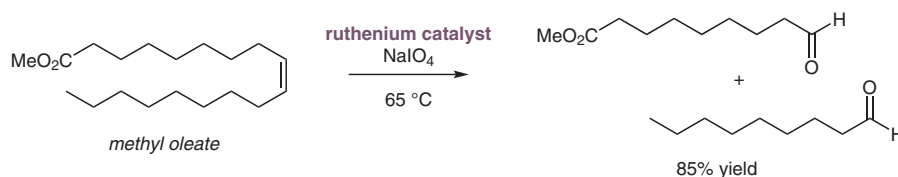
### Preparation of the ruthenium catalyst:



### Selected examples:



<sup>a</sup> Selectivity towards carbonyl product (in %) vs. overoxidation to the corresponding acid.



**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<sup>-1</sup>, turnover numbers of several millions and is readily prepared in a four-step synthesis utilizing commercially available starting materials.