

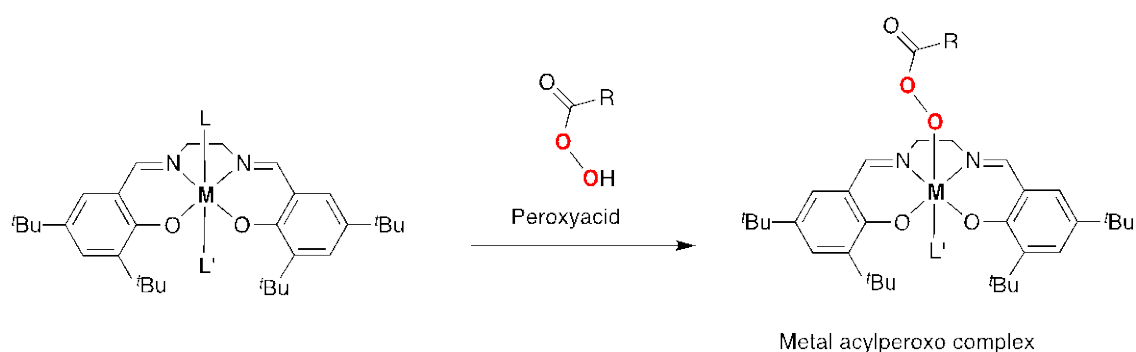
## Monooxidation Ability of a Metal Acylperoxo Complex

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Monooxygenation, such as hydroxylation of C-H bonds and epoxidation of C=C bonds, is oxygen-atom-transfer reaction from an oxidant into a substrate. In natural systems, cytochrome P450, a typical monooxygenase, catalyzes monooxygenation of a wide range of substrates with dioxygen gas as an oxidizing agent. In artificial systems, most of the monooxygenation reactions have been carried out by use of various oxidants instead of dioxygen gas because it is difficult to activate and utilize dioxygen gas. In both natural and artificial systems, metal-oxo and metal-peroxo intermediates are proposed to be reactive oxygen species. Therefore, the detailed study of the reactive oxygen species in catalytic monooxygenation is essential to construct an efficient artificial monooxygenation system by means of dioxygen gas. In this work, a novel metal acylperoxo complex has been synthesized with a peroxyacid, and the reactivity and spectroscopic properties of the acylperoxo complex have been investigated (Figure 1).



**Figure 1.** Synthetic scheme of a metal acylperoxo complex