Toward a useful catalytic transformation of N_2O using group 9 organometallic complexes

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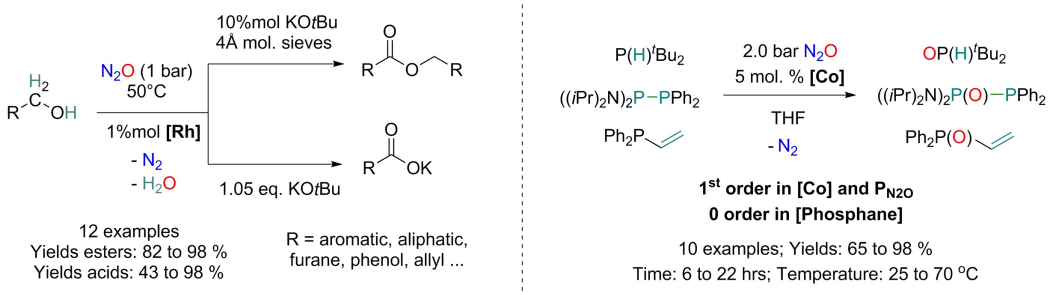
Nitrous oxide (N_2O) gases have been recently identified as the largest global ozone depleting agents and as the 3rd largest emitted greenhouse gases worldwide and 300 times more powerful than CO_2.[1] N_2O is naturally produced via nitrification and denitrification of nitrate during nitrogen cycle, but is also an industrial waste. N_2O emission has increased significantly during industrialization as a result of agricultural soil management, N-fertilizer use, livestock waste management, mobile & stationary fossil fuel, combustion and industrial processes. Its transformation to less harmful chemicals is of particular interest but very challenging, since even if thermodynamically unstable, nitrous oxide is kinetically inert.[2] We have successfully design low valent and reactive organometallic species containing group 9 metals (Rh[3] and Co[4]) that activate and catalytically transform, under mild conditions, this environmentally unfriendly molecules to valuable chemicals.



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