OC08
PHOTOCATALYTIC OXIDATION OF SILICATES FOR C-C BOND FORMATION

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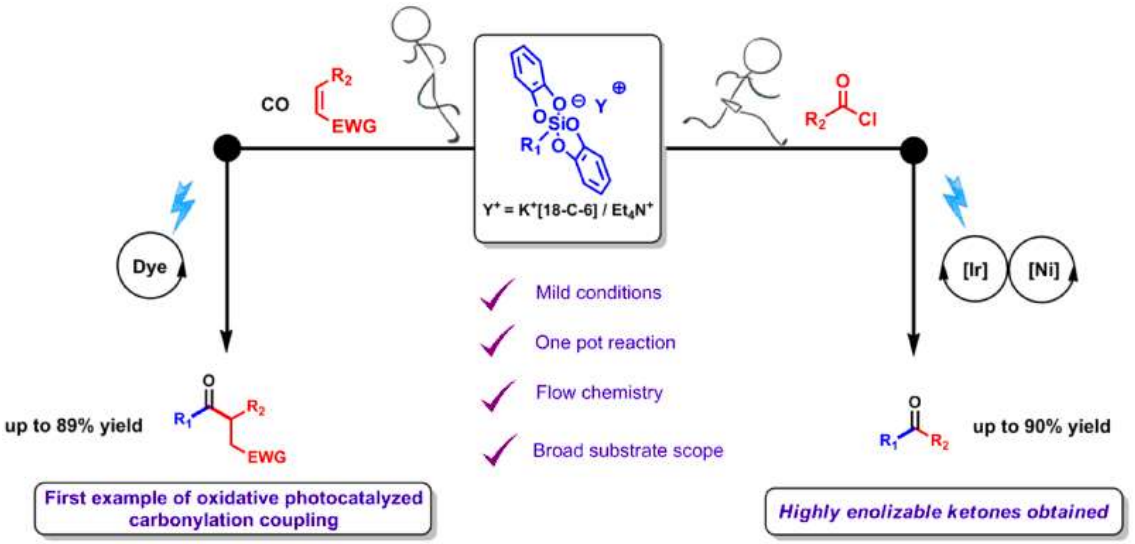
Photoredox catalysis now holds a privileged position in modern radical chemistry. Visible-light irradiation of several families of alkyl radical precursors, such as alkyl carboxylates[1] and alkyl trifluoroborates[2], is known to promote the efficient formation of alkyl radical species under photooxidation conditions. Recently, alkyl bis(catecholato)silicates were introduced to allow the smooth generation of a variety of alkyl radicals[3],[4], including unstabilized primary ones. Our research focuses on exploring the range of possibilities that offer this new type of precursor. In addition of being able to achieve very interesting cross-coupling reactions we found that they can react with an acyl chloride forming ubiquitous ketones[5]. Their possible reaction in a multi-component way with a gas like CO has also also been evaluated[6] and the first example of oxidative photocatalyzed carbonylation coupling reported.



References
[1] A. Noble, D. W. C. MacMillan, *J. Am. Chem. Soc.* **2014**, 136, 11602–11605.
[2] Y. Yasu, T. Koike, M. Akita, *Adv. Synth. Catal.* **2012**, 354, 3414–3420.
[3] V. Corcé, L.-M. Chamoreau, E. Derat, J.-P. Goddard, C. Ollivier, L. Fensterbank, *Angew. Chem. Int. Ed.* **2015**, 54, 11414–11418.
[4] M. Jouffroy, D. N. Primer, G. A. Molander, *J. Am. Chem. Soc.* **2016**, 138, 475–478.
[5] E. Levernier, V. Corcé, L.-M. Rakotoarison, A. Smith, M. Zhang, S. Ognier, M. Tatoulian, C. Ollivier, L. Fensterbank, *Org. Chem. Front.* **2019**, 6, 1378-1382.
[6] A. Cartier, E. Levernier, V. Corcé, T. Fukuyama, A. -L. Dhimane, C. Ollivier, I. Ryu and L. Fensterbank, *Angew. Chem. Int. Ed.* **2019**, 58, 1803-1807.