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Catalytic conversion of small molecules (CO_2, CO and N_2O) under metal-free conditions

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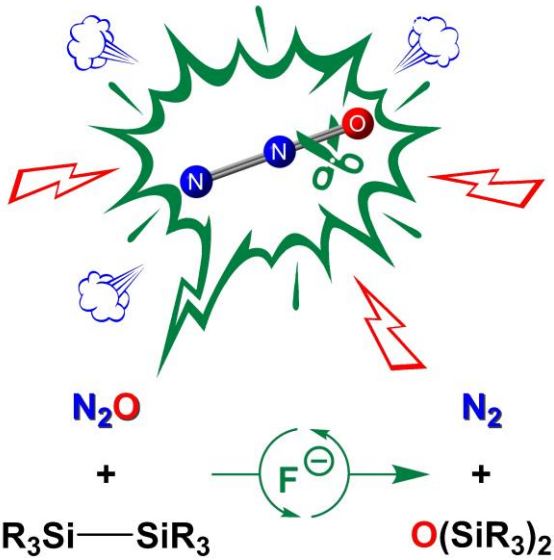
Small molecules based on carbon and nitrogen oxides, such as CO_2, CO and N_2O, are problematic toxic and/or greenhouse effects. Although they exhibit a low reactivity, they also represent attractive sources of nitrogen and carbon and represent interesting model substrates to better understand the intrinsic reactivity of C–O and N–O bonds.

Our recent work on small molecules has led us to develop efficient catalytic reactions aiming at the reduction and functionalization of carbon and nitrogen oxides. While catalysts based on transition metal complexes define the state-of-the-art in the conversion of CO_2, N_2O and CO, we have shown that catalysts based on main group elements can convert these stable gases, under ambient conditions. [1]



[1]Anthore-Dalion, L. ; Nicolas, E. ; Cantat, T. ; *ACS Catal.* **2019**, *9*, 12, 11563-11567 ; Imberdis, A. ; Lefèvre, G. ; Cantat, T. *; Angew. Int. Ed. Eng.,* **2019**, 58, 17215-17219 ; von Wolff, N. ; Lefèvre, G. ; Berthet, J.-C. ; Cantat, T. ; *ACS Catal.* **2016**, *6*, 4526-4535.