



**HAL**  
open science

# Catalytic strategies for the reduction of C-O bonds and their utilization in the conversion of CO<sub>2</sub> and other small molecules

Thibault Cantat

► **To cite this version:**

Thibault Cantat. Catalytic strategies for the reduction of C-O bonds and their utilization in the conversion of CO<sub>2</sub> and other small molecules. SRC 2021 Scientific Day: Chemicals from Carbon Dioxide, Oct 2021, Bruxelles, Belgium. cea-03384491

**HAL Id: cea-03384491**

**<https://hal-cea.archives-ouvertes.fr/cea-03384491>**

Submitted on 19 Oct 2021

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## Catalytic strategies for the reduction of C-O bonds and their utilization in the conversion of CO<sub>2</sub> and other small molecules

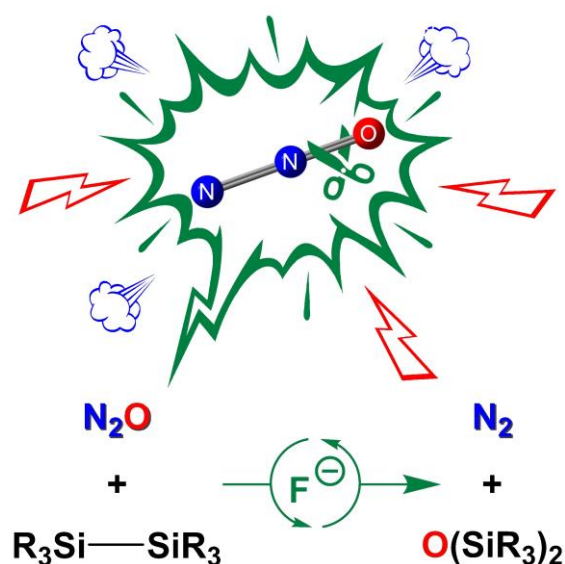
Thibault Cantat

NIMBE, CEA, CNRS, Université Paris-Saclay, 91191 Gif-sur-Yvette, France

[thibault.cantat@cea.fr](mailto:thibault.cantat@cea.fr)

Small molecules based on carbon and nitrogen oxides, such as CO<sub>2</sub>, CO and N<sub>2</sub>O, 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<sub>2</sub>, N<sub>2</sub>O and CO, we have shown that catalysts based on main group elements can convert these stable gases, under ambient conditions.<sup>1</sup>



<sup>1</sup>Anthore-Dalio, 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.