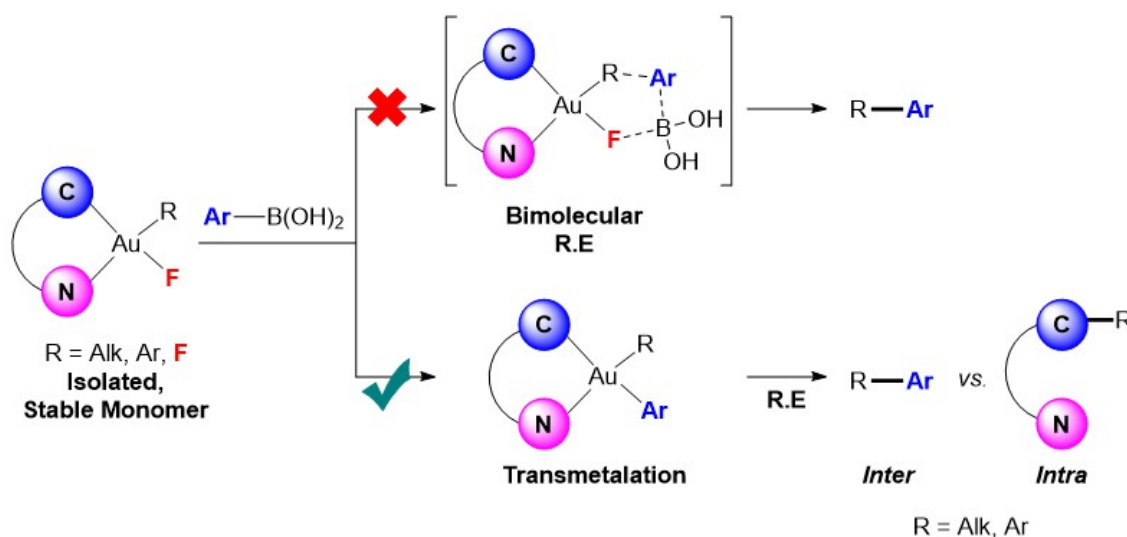


How Boronic Acids Interact with Gold(III)-Fluorides: A Mechanistic Investigation

R. Kumar¹, C. Nevado^{1*}

¹University of Zurich

In the past decade numerous Au^I/Au^{III} catalyzed transformations have been developed in order to construct C-C, C-X and C-F bonds.¹ Many of these reactions use Selectfluor (an electrophilic fluorinating reagent) as a sacrificial oxidant and aryl boronic acids as coupling partners. In these processes, it has been proposed that gold(III) fluorides intermediates react with boronic acids via a bimolecular reductive elimination pathway or transmetalation followed by reductive elimination to deliver the product.²⁻³ However, due to highly reactive nature of Au^{III}-F species, these mechanistic proposals still lack experimental support. Here, we present our results on the preparation and characterization of a series of novel (C[^]C[^]N) and (C[^]N)-stabilized gold(III) fluorides in monomeric form and an in depth study on their reactivity with aryl boronic acids where we observe and isolate the transmetalation product.⁴⁻⁵ Importantly, this novel (C[^]C[^]N) pincer type gold(III) framework enable the synthesis of first stable gold(III) formate complex which open a way towards homogeneous gold catalyzed dehydrogenation of formic acid.⁶



[1] Kumar, R.; Nevado, C. *Angew. Chem. Int. Ed.* **2017**, 56, 1994-2015 .

[2] Mankad, N. P.; Toste, F. D. *J. Am. Chem. Soc.* **2010**, 132, 12859-12861.

[3] Wu, Q. ; Du, C. ; Huang, Y. ; Long, Z. ; Song, F. ; You, J. *Chem. Sci.* **2015**, 6, 288-293.

[4] Kumar, R.; Linden, A.; Nevado, C. *Angew. Chem. Int. Ed.* **2015**, 54, 14287-14290.

[5] Kumar, R.; Linden, A.; Nevado, C. *J. Am. Chem. Soc.* **2016**, 138, 13790-13793.

[6] Kumar, R.; Krieger, J.-P.; Bengoa, E. -G.; Linden, A.; Nevado, C. *Angew. Chem. Int. Ed. Under revision*