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Exploiting the Acidity of Gold(I) Complexes in Uncommon Ways

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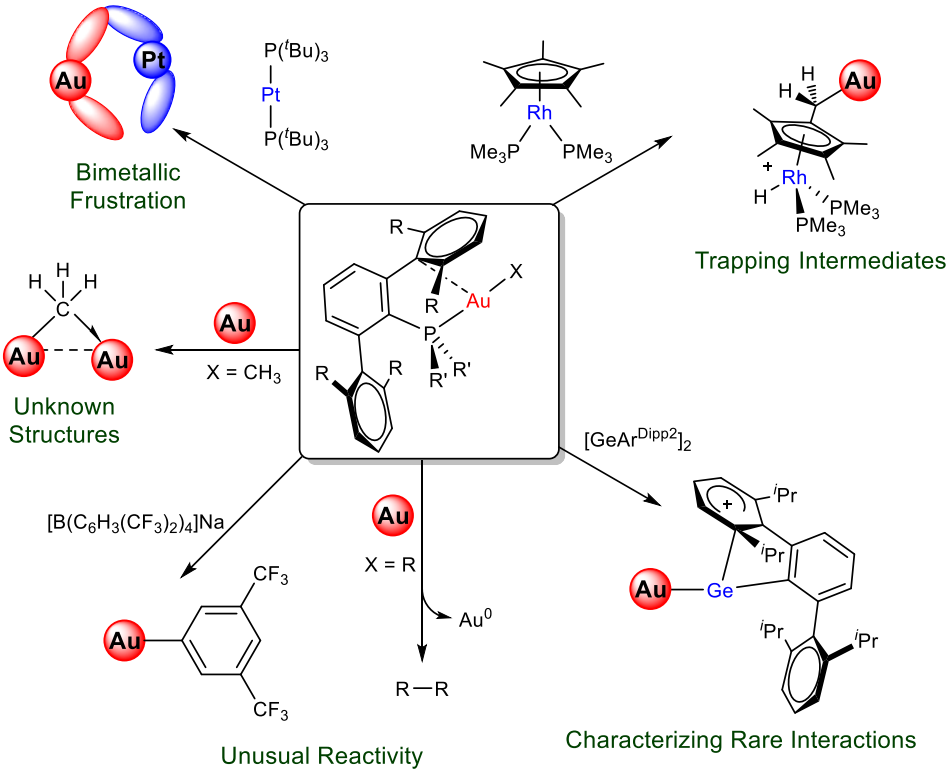
The chemistry of gold has witnessed a frenetic development over the last two decades due to the disclosure of a wide variety of catalytic applications under homogeneous conditions, particularly electrophilic activations of alkynes, alkenes, allenes, and other molecules with C—C multiple bonds.[1] However, fundamental information on bonding schemes and structural information of unconventional gold species, including key intermediates of mechanistic cycles, have evolved at a slower pace, though remarkable developments have been reported in the last years. Considering the continuously growing interest on bimetallic complexes,[2] we recently started to investigate those incorporating electrophilic gold(I) fragments. More precisely, we have focused on Au(I) species stabilized by sterically hindered phosphine ligands containing a terphenyl (2,6-C_6H_3-Ar_2) substituent. The steric shrouding provided by these ligands permitted us to isolate unknown digold structures,[3] study in detail unconventional reaction modes derived from the electrophilicity of gold, such as C—B bond cleavage and C—C bond formation processes, design frustrated Lewis pairs entirely based on transition metals,[4] trapping transient metallic intermediates or identify rare examples of weak interactions in metalloids. A summary of these results and their implications in the field of gold chemistry will be discussed.



[1] (a) Pflästerer, D.; Hashmi, A.S.K. *Chem. Soc. Rev.* **2016**, *45*, 1331; (b) Dorel, R.; Echavarren, A. M. *Chem. Rev.* **2015**, *115*, 9028; (c) Corma, A.; Leyva-Pérez, A.; Sabater, M. J. *Chem. Rev.* **2011**, *111*, 1657.
[2] (a) Farley, C. M.; Uyeda, C. Trends in Chemistry, **2019**, *1*, 497; (b) Pye, D. R.; Mankad, N. P. *Chem. Sci.* **2017**, *8*, 1705; (c) Buchwalter, P.; Rosé, J.; Braunstein, P. *Chem. Rev.* **2015**, *115*, 28.
[3] Espada, M. F.; Campos, J.; López-Serrano, J.; Poveda, M. L.; Carmona, E. *Angew. Chem., Int. Ed.* **2015**, *54*, 15379.
[4] (a) Campos, J. *J. Am. Chem. Soc.* **2017**, *139*, 2944; (b) Hidalgo, N.; Moreno, J. J.; Pérez-Jiménez, M.; Maya, C.; López-Serrano, J.; Campos, J. *Chem. Eur. J.* **2020**, *just accepted*.