

# TRANS EFFECTS IN GOLD(III) CHEMISTRY: IMPLICATIONS FOR STRUCTURE, REACTIVITY, AND CATALYSIS

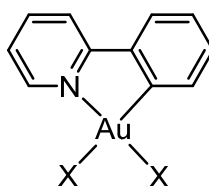
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The *trans* effect has earned itself a prominent position in the understanding of structure and reactivity in coordination chemistry over the course of more than a century [1]. Such effects are most clearly seen in the chemistry of square planar, 16-electron  $d^8$  complexes. Thermodynamic *trans* effects (often called *trans* influence) are expressed in ground-state properties, and kinetic *trans* effects manifests themselves in chemical reactivity.

The phenylpyridine ligand scaffold is commonly encountered in gold(III) chemistry [2,3]. This (N,C) ligand type offers two chelate sites that are very well separated in the *trans* effect series: C(aryl), with a high *trans* effect, and N(pyr), with a much lower *trans* effect. It should be evident that such a (N,C) chelate offers a square planar environment in which the two coordination sites that are *trans* relative to the two chelate sites might be electronically very different. Thence, the two ligands X might exhibit very different chemical properties.



In this contribution, examples of manifestations of such *trans* effects (thermodynamic or kinetic) in Au(III) chemistry will be discussed, with examples chosen from synthesis, structure, reactivity, and catalysis [4].

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[1] Basolo, F.; Pearson, R. G. *Prog. Inorg. Chem.* **1962**, *4*, 381-453.

[2] Henderson, W. *Adv. Organomet. Chem.* **2006**, *54*, 207-265.

[3] Martín, J.; Gómez-Bengo, E.; Genoux, A.; Nevado, C. *Angew. Chem. Int. Ed.* **2022**, *61*, e202116755.

[4] Hylland, K. T.; Schmidtke, I. L.; Wragg, D. S.; Nova, A.; Tilset, M. *Dalton Trans.* **2022**, *51*, 5082-5097, and references cited.