TRANSITION METAL-CATALYZED REACTIONS: FROM LABORATORY TO SCALE-UP DEVELOPMENT

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Over the past few years, significant research has been directed toward the development of new methods for synthetic efficiency and atom economical processes. Among them, the potential of transition metal-catalyzed reactions has been steadily demonstrated, as they provide a direct and selective way toward the synthesis of highly valuable products. We have been engaged in a project dedicated to the development of catalytic methods for the synthesis of bio-relevant targets. More specifically, we have been interested in asymmetric reductions such as hydrogenation and transfer hydrogenation reactions, which provide important catalytic approaches to fine chemicals. In this context, our contribution to this field is the development of novel ligands and organometallic complexes for C-H bond forming processes to access biorelevant targets. Some applications in this field will be presented. [1-5]

Selected references

[1] L. Bacheley, J. Boutet, G. Guillamot, P. Gilles, J. Martin, P. Phansavath, V. Ratovelomanana-Vidal, "Stereoselective Access to β-gem Difluorinated Alcohols Through Enzymatic Reduction" *Adv. Synth. Catal.* **2024**, *366*, 3511-3515. Special issue "Fluorine in chemistry" Invitation Prof J. Richmond (Editor-in-Chief *Adv. Synth. Catal.*) & Prof V. Gouverneur

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[4] R. Molina-Betancourt, P. Phansavath, V. Ratovelomanana-Vidal "Rhodium-Catalyzed Asymmetric Transfer Hydrogenation/Dynamic Kinetic Resolution of 3-Benzylidene-Chromanones" *Org. Lett.* **2021,** *23*, 1621-1625.

[5] J.P. Genêt, P. Phansavath, V. Ratovelomanana-Vidal "Asymmetric Hydrogenation: Design of Chiral Ligands and Transition Metal Complexes. Synthetic and Industrial Applications" (Special issue dedicated to Prof B. Trost, Invitation Prof E. Keinan) *Isr. J. Chem.* **2021,** *61,* 409-426.