

INSIGHT-DRIVEN STRATEGIES IN CATALYSIS FOR SELECTIVE FUNCTIONALIZATIONS

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Detailed understanding of catalytic transformations is key to designing better catalysts. This talk will give insights on case studies and reactivity designs recently undertaken in our laboratory. These include our recent activities in establishing and exploring multinuclear metal catalysis, the unravelling of fundamental aspects of key elementary steps in catalysis and the development of metal-free reactivity to overcome pertinent synthetic challenges. Direct applications of these concepts to the late-stage introduction of fluorine-containing groups and chemoselective C-C bond formations for the creation of richly functionalized (hetero)aryl motifs will be presented.¹ Experimental and computational tools were applied in these studies and their combined use will be featured in the presentation.²

1. Recent examples: (a) Kapat, A.; Sperger, T.; Guven, S.; Schoenebeck, F. *Science* **2019**, *363*, 391-396; (b) Diehl, C. J.; Scattolin, T.; Englert, U.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2019**, *58*, 211-215; (c) Pu, M.; Sanhueza, I. A.; Senol, E.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2018**, *57*, 15081-15085; (d) Keaveney, S. T.; Kundu, G.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2018**, *57*, 12573-12577; (e) Keaveney, S. T.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2018**, *57*, 4073-4077; (f) Kalvet, I.; Magnin, G.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2017**, *56*, 1581-1585; (g) Scattolin, T.; Deckers, K.; Schoenebeck, F. *Angew. Chem. Int. Ed.* **2017**, *56*, 221-224.

2. For recent reviews, see: (a) Poree, C.; Schoenebeck, F. *Acc. Chem. Res.* **2017**, *50*, 605-608; (b) Sperger, T.; Sanhueza, I. A.; Schoenebeck, F. *Acc. Chem. Res.* **2016**, *49*, 1311-1319; (c) Sperger, T.; Sanhueza, I. A.; Kalvet, I.; Schoenebeck, F. *Chem. Rev.* **2015**, *115*, 9532-9586.