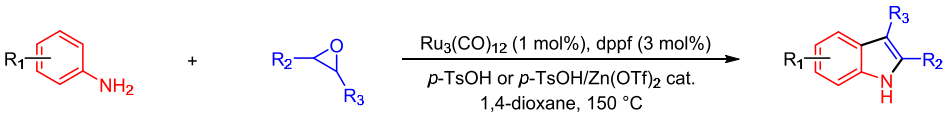
Graphical summary of work achievements (PIEF-GA-2012-328500 - 05.06.2013/04.06.2015)

1) Ruthenium-Catalyzed Synthesis of Indoles from Anilines and Epoxides.



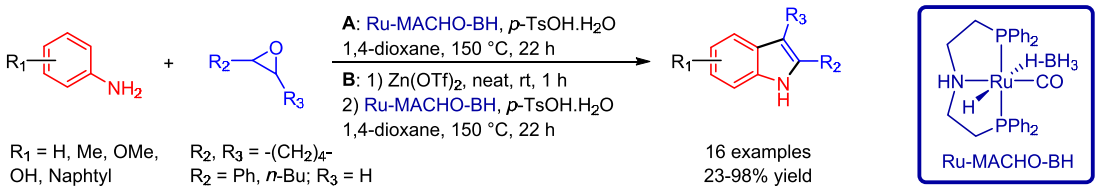
R_1 = H, Me, OMe, OH, F, Ac, NMe_2, 2,5-Me, 3,5-Me, Naphtyl

R_2, R_3 = $-(CH_2)_3-$, $-(CH_2)_4-$
R_2 = Ph, *p*-ClPh, *n*-Bu; R_3 = H
R_2 = Ph; R_3 = Me

33 examples
43-89% yield

M. Peña-López, H. Neumann, M. Beller, *Chem. Eur. J.* **2014**, *20*, 1818-1824.

2) Benign Synthesis of Indoles from Anilines and Epoxides: New Application for Ruthenium Pincer Catalysts.



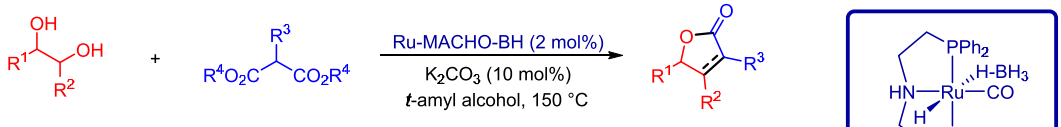
R_1 = H, Me, OMe, OH, Naphtyl

R_2, R_3 = $-(CH_2)_4-$
R_2 = Ph, *n*-Bu; R_3 = H

16 examples
23-98% yield

A. Monney, M. Peña-López, M. Beller, *Chimia* **2014**, *68*, 231-234.

3) Ruthenium Pincer-Catalyzed Synthesis of Substituted γ-Butyrolactones using Borrowing-Hydrogen Methodology.



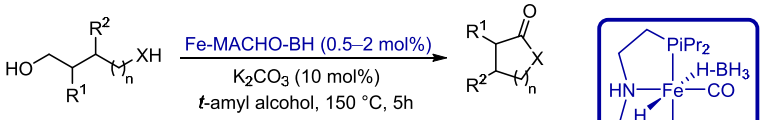
R^1, R^2 = $-(CH_2)_n-$; n: 3, 4, 6
R^1 = *n*Bu, *n*Hex, Hexenyl, *t*Bu, Ph, Bn; R^2 = H

R^3 = H, Me, *n*Bu, Ph
R^4 = Me, Et, *t*Bu, Bn

17 examples
50-63% yield

M. Peña-López, H. Neumann, M. Beller, *Chem. Commun.* **2015**, DOI 10.1039/c5cc01708d (*in press*).

4) Iron(II) Pincer-Catalyzed Synthesis of Lactones and Lactams through a Versatile Dehydrogenative Domino Sequence.

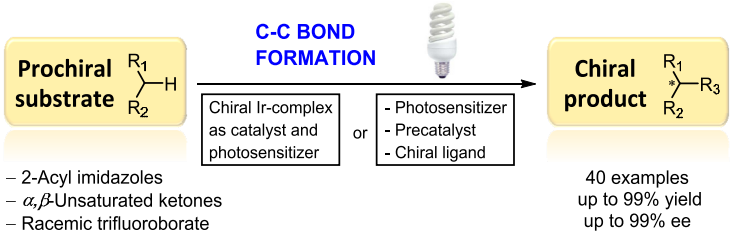


R^1, R^2 = aryl, alkyl, H
X = O, NH, NBn
n = 1, 2, 3

24 examples
41-98% yield

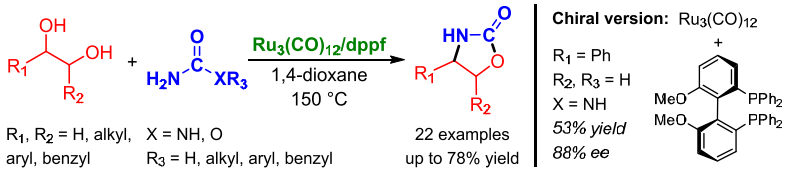
M. Peña-López, H. Neumann, M. Beller, *ChemCatChem* **2015**, 7, 865-871.

5) Progress on All Ends for Carbon–Carbon Bond Formation through Photoredox Catalysis.



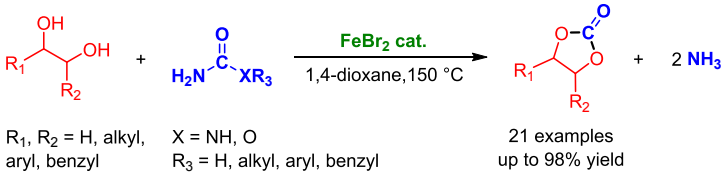
M. Peña-López, A. Rosas-Hernández, M. Beller, *Angew. Chem. Int. Ed.* **2015**, *54*, 5006-5008.

6) (Enantio)Selective Hydrogen Autotransfer Methodology: Ruthenium-Catalyzed Synthesis of Oxazolidin-2-ones from Urea and Diols.



M. Peña-López, H. Neumann, M. Beller, *J. Am. Chem. Soc.* **2015**, *(submitted)*.

7) Iron-Catalyzed Synthesis of Cyclic Carbonates from Vicinal Diols: Urea as CO Source.



M. Peña-López, H. Neumann, M. Beller, *ChemSusChem* **2015**, *(submitted)*.