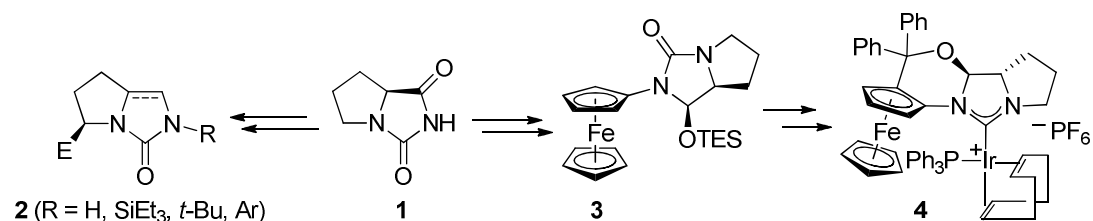


Development of Chiral Auxiliaries and Catalysts from Proline Hydantoin

Costa Metallinos

Brock University, St Catharines, Ontario, Canada

Our research program is focused on designing chiral reagents and catalysts for applications in asymmetric synthesis based on structural frameworks that have been under-exploited for lack of practical syntheses. Recent work has focused on the use of L-proline hydantoin (**1**) as a common starting material for the preparation of variously substituted imidazolone precursors (**2**) to *N*-heterocyclic carbenes (NHCs), including *N*-ferrocenyl imidazolones (**3**). Stereoselective induction of planar chirality in the latter molecules has enabled synthesis of iridium complexes bearing unusual NHCs (e.g., **4**) that catalyze asymmetric hydrogenation of quinolines at low hydrogen pressures (1-5 atm). A survey of recent results in this area will be presented.¹⁻⁵



1. John, J.; Wilson-Konderka, C.; Metallinos, C. *Adv. Synth. Catal.* **2015**, 357, in press.
2. Metallinos, C.; Sadraei, S. E.; Zhukovskaya, N., *Heterocycles* **2014**, 88, 347.
3. Metallinos, C.; John, J.; Nelson, J.; Dudding, T.; Belding, L. *Adv. Synth. Catal.* **2013**, 355, 1211.
4. Metallinos, C.; John, J.; Zaifman, J.; Emberson, K. *Adv. Synth. Catal.* **2012**, 354, 602.
5. Metallinos, C.; Xu, S. *Org. Lett.* **2010**, 12, 76.