QuickTime™ and a decompressor are needed to see this picture.

Fluorophobic Effects in Homogeneous Catalysis

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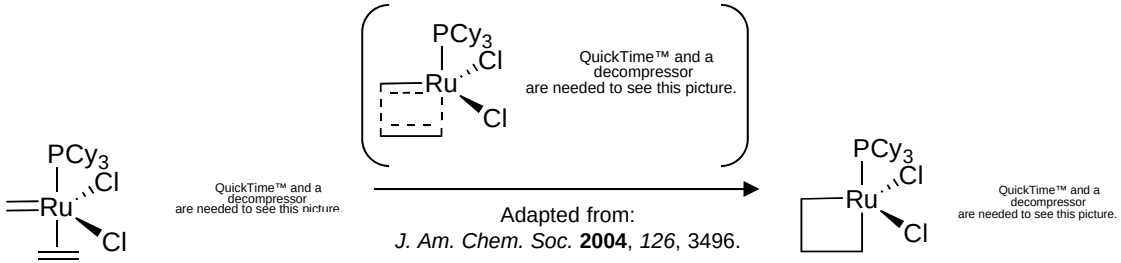
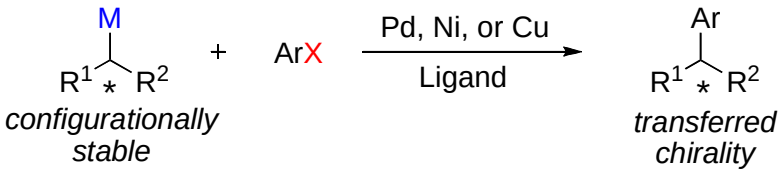
Hydrocarbon surfaces display the tendency to aggregate (fluorophobicity) when dissolved in highly fluorinated solvents. We employ this phenomenon to accelerate problematic steps of transition metal-catalyzed organic transformations in order to develop new methods. Shown below is the product-determining step of the catalytic cycle of olefin cross-metathesis. This step should be accelerated in fluorous solvents as a result of fluorophobic interactions, giving rise to unique olefin (E/Z) product distributions.



The development of a general transition metal-catalyzed process for the incorporation of optically active centers into organic molecules would be immediately impactful on the fields of medicinal and materials chemistry. In these studies, we place special emphasis on practicality and the use of environmentally-benign solvents. The goal of this research is shown below. We have made significant process towards this end, which has been published in the listed articles.



M = main group metal

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Org. Lett. **2011**, *13*, 1218.