

ORGANIC SEMINAR

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4:30 PM, WTHR 104

“Catalytic Activation and Functionalization of Hydrocarbons”

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Abstract:

We are interested in methodology development for the catalytic functionalization of simple and abundant hydrocarbons, producing value-added synthetic intermediates. Homolytic cleavage of a C–H bond by radical catalysis is a feasible initial step to the overall catalytic cycle. We found that a thiyl radical derived from TPA or TPI is useful for the cleavage of C–H bonds with the bond dissociation energy of ca. 80–90 kcal/mol. Such C–H bonds include allylic,¹ benzylic,² α -hydroxy,³ and formyl C–H bonds.⁴ The binaphthyl skeleton of TPA and TPI, acting as a redox tag, is an essential structural motif for radical catalysis.⁵

In this talk, I will present catalytic acceptorless dehydrogenation⁶ and allylation of aldehydes through the cleavage of allylic C–H bonds of hydrocarbons.^{7,1} I will also discuss our recent progress.

References

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