



Design and applications of selective reactions of olefins

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Abstract Speech

Olefin metathesis catalysts have become one of the tools for the efficient synthesis of complex molecules. Until recently, the catalysts demonstrated poor catalyst controlled selectivity. Over the past several years, complexes based on molybdenum, tungsten and ruthenium have been discovered that will produce olefins good to excellent selectivity for the generation of Z olefins both in cross and in ring closing metathesis. New ligands have been developed that result in different selectivities and open new applications of metathesis in the synthesis of an array of complex molecules. These catalysts are developed through design, computation and serendipity. Applications range from the preparation of pharmaceuticals to the control of the structure of polymeric materials.

REFERENCES

“Synthesis of Highly Cis, Syndiotactic Polymers via Ring-Opening Metathesis Polymerization Using Ruthenium Metathesis Catalysts “ L. E. Rosebrugh, V. M. Marx, B. K. Keitz, R. H. Grubbs, *J. Am. Chem. Soc.* **2013**, *135* (27), 10032-10035

“Highly Active Ruthenium Metathesis Catalysts Exhibiting Unprecedented Activity and Z-Selectivity.” L. E. Rosebrugh, M. B. Herbert, V. M. Marx, B. K. Keitz, R. H. Grubbs, *J. Am. Chem. Soc.* **2013**, *135* (1), 1276-1279.