

# **UNH Materials Science Seminar**

11:10-12:00, Thursday, February 15, 2007

Murkland Hall 202

University of New Hampshire

## **A Review of Polymer Synthesis Combining Ring Opening Metathesis Polymerization and Free Radical Living Polymerizations**

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Thanks to recent advances in the chemistry of preparing polymers, an increasing number of tools are at our disposal for the design of polymer materials. The design levels range from monomer synthesis, controlled stepwise or chainwise polymerization, block copolymer synthesis, branching and crosslinking reactions. The synthesis of properly tailored architectures can be achieved by using living/controlled polymerization processes such as anionic, cationic, radical or group transfer polymerization, ring opening polymerization of lactones and lactides, ring opening metathesis polymerization (ROMP) of cyclic olefins, and co-ordination polymerization. Of particular interest today is the combination of two of these processes, allowing adding together monomer polymerizing with different chemistry. We will review the synthetic routes developed recently for building up novel copolymer structures based on the combination of two controlled polymerization techniques: Ring opening metathesis polymerization (ROMP) and a free radical living polymerization such as atom transfer radical polymerization (ATRP), Reversible Addition Fragmentation chain Transfer polymerization (RAFT) and nitroxide mediated polymerization (NMP). This technique offers a great versatility in the making of block and branched copolymers bearing a variety of functionality.