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IL07 – Approaches to Selective Functionalization  
of C–H Bonds in Small and Complex Molecules

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The selective introduction or modification of functional groups in complex molecules has been a longstanding challenge in catalysis. Our group has developed practical methods for the catalytic functionalization of C–H bonds with boranes, silanes and azides. These studies have resulted from a general strategy in which a single C–H bond functionalization reaction that installs a temporary functional group can be used to create range of products. This research has led us to seek new systems for the functionalization of C–H bonds in complex molecules and to develop new classes of catalysts that create new capabilities of achieving selective catalysis with transition metal centers. This lecture will present recent directions of research in our group toward discovering selective C–H bond functionalization reactions of both small and complex molecules. The design and selection, as well as the intimate mechanism, of catalysts and catalytic reactions for selective functionalization processes will be presented.

