Research focuses on developing new transition metal catalysts based on supermolecular chemistry for chemoselective C-H bond activation of small molecules; developing novel catalytic C-H and C-C bond activation methods for efficient small-molecule agents synthesis; establishing efficient synthetic routes to access natural products with high potent anticancer activity and their unnatural analogues; and evaluating in vitro and in vivo efficacy of rationally designed natural product analogues and understanding the origins of the selectivity in the cell-killing process.

Website: http://www.cm.utexas.edu/guangbin_dong

Abstract
C-H and C-C bonds are the most abundant bonds in majority of organic compounds. Selective functionalization of C-C and C-H bonds would lead to efficient synthesis but of significant challenges. We have been focusing on a “cut and sew” strategy to synthesize bridged and fused rings by utilizing metal-catalyzed C-C bond activation. We have also been working on a number of ketone and alcohol-based site-selective C-H functionalizations for preparing useful building blocks.