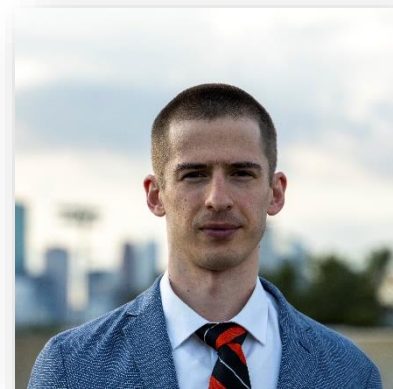


Rapid synthesis of primary amines by radical C-H amination

Dr. Robert J. Comito

Department of Chemistry
University of Houston



Chemistry Seminar on C-H amination

4:00 p.m.

Monday

Feb 7

**In 303 Schrenk
also live via
Zoom**

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Abstract: Simple amination of sp^3 C-H bonds to primary amines ($R-NH_2$) would rapidly accelerate the synthesis of bioactive alkaloids and the postsynthetic modification of polymers. Yet this transformation remains highly limited in comparison to simple hydroxylation and halogenation, reactions fundamental both to both biosynthesis and industrial organic chemistry. This talk discusses my laboratory's development of an intermolecular sp^3 C-H amination protocol that delivers primary ammonium salts ($R-NH_3Cl$) in one pot upon aqueous workup. Mild conditions, good site selectivity, and reactivity on unactivated sp^3 C-H bonds distinguish our method from other radical C-H amination reactions. We have further characterized a unique mechanism involving hydrogen-atom transfer to iminyl radicals that will inform the development of CH activation chemistry. I discuss our ongoing application of this method to material synthesis and our strategies to control site selectivity by electronic tuning.

About the speaker: Robert Comito is a synthetic organic chemist who studies new reactions and catalysts for small molecule and polymer synthesis. Robert completed a BA in chemistry and mathematics at Rutgers University in New Jersey, the state where Robert grew up. While at Rutgers, Robert studied medicinal chemistry with Prof. Spencer Knapp and at the Merck Future Talent Program. Robert then completed his PhD in 2014 at Princeton University with future Nobel Prize winner David MacMillan. His thesis focused on asymmetric alkylation reactions using organocatalysis and the total synthesis of polypyrrolindoline natural products. Robert then pursued postdoctoral studies at Massachusetts Institute of Technology under Mircea Dinca, where he studied olefin upgrading and polymer synthesis with metal-organic frameworks. In 2018, Robert joined the faculty at the University of Houston as the Herman and Joan Suit Professor of Polymer Chemistry. His research is supported by the ACS Petroleum Research Fund and the Welch Foundation. Robert currently leads a team of 8 graduate students, one postdoc, and four undergraduates. Robert also serves on the UH Chemistry department's graduate admissions committee and is a good person to contact about graduate opportunities at UH.