Chemical synthesis: enabling technology and enigmatic challenge

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Research in the Dudley Lab is designed to further the science and practice of organic chemistry. This seminar will cover two disparate topics linked by a focus on expanding the power of *chemical synthesis*, an enabling technology for all of the molecular sciences. The first part features“alkynogenic fragmentation” methodology:C–C bond-cleaving anionic fragmentation reactions that generate alkynes. It focuses on alkyne chemistry in the context of important problems in the chemical synthesis of bioactive natural products.The second part of the seminar addresses enigmas surroundingthe use of microwave electromagnetic radiation to promote thermal chemical reactions. Organic reaction mixtures are typically heated convectively, and the physics of convective heat transfer underlies all of physical organic theory. Microwave energy, in contrast, produces heat by fundamentally different mechanisms, which need to be understood in order for us to gain maximum benefit from this new technology. Examples and a physical model for selective heating in solution will be presented and discussed.