Background and Purpose. 

SYNFORM will from time to time meet young up-and-coming researchers who are performing exceptionally well in the arena of organic chemistry and related fields of research, in order to introduce them to the readership. This SYNSTORY with a Young Career Focus presents Professor Jimmy Wu, Dartmouth College, Hanover, NH, USA.

**INTERVIEW**

SYNFORM | What is the focus of your current research activity?

Prof. Jimmy Wu | My research can be roughly divided into two major programmatic themes. The first of these focuses on the discovery of new methodologies for the construction of carbon–sulfur bonds. Sulfur is an integral (but under-appreciated) component of pharmaceutical drugs. Despite the prominence of sulfur in medicine and other fields, the synthetic methods by which it is incorporated into molecules are limited in both breadth and scope. A brief survey of organosulfur chemistry reveals that it lags substantially behind the many exciting technologies being developed for carbon, nitrogen, and oxygen. A long-term goal of my group is to modernize the study of sulfur by the rational and systematic application of contemporary chemical theory to the design of new reactions involving this element.

The second major research thrust in my group concentrates on the discovery of new alkylation and annulation strategies for indoles and related heterocycles. Heterocyclic compounds are ubiquitous in nature and medicine and are even more prevalent than sulfur in active therapeutic agents. Indole is arguably one of the most important heterocycles in medicine; but, despite nearly a century of research, numerous synthetic challenges remain unresolved.

SYNFORM | When did you get interested in synthesis?

Prof. Jimmy Wu | As I’m sure is the case with many other scientists, my interest in synthesis began with a handful of fantastic teachers and mentors. During my undergraduate studies, it was Marty Semmelhack and Mait Jones who first introduced me to the wonderful world of organic chemistry. But it was during my time as a bachelor level chemist at Merck Process Research when I realized that graduate school was in my future. At Merck, I witnessed firsthand what organic chemistry could do for society. What a thrill it was for a young man like me, fresh out of university, to be given the opportunity to make meaningful contributions to human health! I entered graduate school with grand plans of one day establishing my own academic research program.

SYNSTORIES A49

Young Career Focus: Professor Jimmy Wu

(Dartmouth College, Hanover, NH, USA)

**BIOGRAPHICAL SKETCH**

Jimmy Wu was born in Taiwan in 1976. He received his A.B. degree in Chemistry from Princeton University (USA) in 1998. He then spent two years as an associate chemist at Merck Process Research (USA) where he worked on the development of selective COX-II inhibitors. Afterwards, he moved to Harvard University (USA) where he obtained his PhD in organic chemistry from Professor David A. Evans. His doctoral work focused on asymmetric catalysis using lanthanide–pybox complexes. He continued his studies as a postdoctoral fellow with Professor Barry M. Trost at Stanford University (USA) where he worked on the synthesis of indolyl alkaloid communesin B. He joined the Department of Chemistry at Dartmouth College (USA) in the summer of 2007.
My PhD and postdoctoral advisors (David Evans and Barry Trost, respectively) provided me with the tools to do just that.

**SYNFORM** | *What do you think about the modern role and prospects of organic synthesis?*

**Prof. Jimmy Wu** | As synthetic chemists, we have the unique ability to make molecules, both natural and unnatural ones. We can do this better and more efficiently than at any other time in history. We continue to develop, at an incredible rate, breathtaking new methodologies that enable the synthesis of very complex molecules. By reaching out to our colleagues in other fields, we have a chance to redefine the boundaries of scientific disciplines. We should try to establish meaningful collaborations as best we can and be accepting of new opportunities as they are presented to us. In my opinion, this is how we as organic chemists will make the biggest scientific impact.

**SYNFORM** | *Your research group is active in the area of sulfur organic chemistry and metal-mediated synthesis. Could you tell us more about your research and aims?*

**Prof. Jimmy Wu** | My group has developed several new technologies for constructing carbon–sulfur bonds. For instance, we reported methods for the direct displacement of alcohols and/or other oxygen-based leaving groups using catalytic Ga(OTf)₃ or UV light. The products of these transformations are phosphorothioate esters (and other thioethers). These are versatile functional groups that can be further converted into thiols, thioethers, and enantioenriched tetrahydrothiophenes. We have also demonstrated that allylic phosphorothioate esters readily participate in transition-metal catalyzed cross-coupling reactions with fluoride and a diverse range of Grignard reagents to furnish carbon–fluorine and carbon–carbon bonds.

More recently, our group has reported Ga(III)-catalyzed three-component annihilation strategies to generate cyclohep-

**SYNFORM** | *What is your most important scientific achievement to date and why?*

**Prof. Jimmy Wu** | It is an honor to even be asked this question; however, I think it is perhaps up to the scientific community to judge what has been our most important achievement to date.

---

*a) J. Am. Chem. Soc.** 2010, **132, 4104
*b) J. Am. Chem. Soc.** 2012, **134, 2775
*c) J. Am. Chem. Soc.** 2011, **133, 9119
*d) Org. Lett.** 2010, **12, 2668
*e) Org. Lett.** 2010, **12, 5780

Angew. Chem. Int. Ed. 2012, **51, 10390

---

Matteo Zanda