

## 2017 Anna Louise Hoffman Award for Outstanding Achievement in Graduate Research

**Tesia Valeska Chciuk**  
**Lehigh University**



Tesia Chciuk, an outstanding graduate student in the Department of Chemistry at Lehigh University, conducts research in the laboratory of Professor Robert Flowers. Tesia's research is designed to examine the role of solvent, water, and coordinating ligands on the chemistry of Sm(II)-based reductants. Tesia has six publications, one in review, and two papers in progress. Her work has appeared in the Journal of the American Chemical Society, Angewandte Chemie, the Journal of Organic Chemistry, and Organic Letters. In addition, she has a comprehensive book chapter on the impact of additives in Sm(II) chemistry. Tesia has proposed that Sm(II)-water complexes carry out reductions of organic substrates through proton-coupled electron-transfer (PCET). In PCET reactions, a proton and electron are transferred in a single kinetic step. The driving force for these reactions is a consequence of bypassing high-energy intermediates and transition states. Although this process is widely recognized it has only recently been employed in organic chemistry. Tesia is demonstrating that it is the basis for many reactions of Sm(II)-water complexes. Her high profile publications are changing the way chemists think about coordination to low-valent metals as a means to carry out formal hydrogen atom transfer to organic substrates to initiate free radical reactions of synthetic importance. Her advisor Flowers, writes: "Her work on the role of water coordination to low-valent reductants will potentially change the way synthetic organic chemists think about synthesis and the use of formal hydrogen atom transfer from Sm(II)-water complexes and related reagent systems as a means to generate free

radicals important in the construction of complex molecules." Tesia's most recent work has shown that Sm(II)-water complexes are not unique. The use of additives such as glycols and amides that ligate strongly to Sm(II) also promote PCET to organic substrates.

Tesia's research accomplishments clearly demonstrate that she will find success in future scientific endeavors as she exemplifies the perseverance and conviction to do so.