

SLATT UNDERGRADUATE STUDENT FELLOWSHIP PROGRESS REPORT

SLATT SCHOLAR:	Kimberly Riordan
FACULTY ADVISOR:	Emily Tsui
REPORT PERIOD:	05/20/19-07/24/19
PROJECT TITLE:	Synthesis Toward a Trigonal Pyramidal Sulfur Radical Supported by a Triarylborane
CONNECTION TO ND ENERGY'S RESEARCH AREAS (CHECK ALL THAT APPLY):	<input checked="" type="checkbox"/> Energy Conversion and Efficiency <input type="checkbox"/> Sustainable and Secure Nuclear <input checked="" type="checkbox"/> Smart Storage and Distribution <input type="checkbox"/> Transformation Solar <input type="checkbox"/> Sustainable Bio/Fossil Fuels <input type="checkbox"/> Transformative Wind

MAJOR GOALS AND ACCOMPLISHMENTS:

List your major research goals and provide a brief description of your accomplishments (1-2 sentences). Indicate the percentage completed for each goal. Please use a separate sheet to share additional details, technical results, charts, and graphics.

MAJOR RESEARCH GOALS	ACTUAL PERFORMANCE AND ACCOMPLISHMENTS	% OF GOAL COMPLETED
Synthesize a triarylborane species	Experimented with different phenol protecting groups. Developed a synthetic route toward a triaryl borane species, while current work is still determining how best to insert the boron.	85
Synthesize a trigonal pyramidal sulfur radical	The triaryl borane species will be deprotected and reacted with sulfur to make the targeted trigonal pyramidal sulfur radical.	60
Synthesize a tris-pyrazole borate zinc thiolate	Second project begun at end of summer, interested to look at sulfur insertion in a non-chelating zinc thiolate complex in comparison to prior work done in the Tsui lab.	20

CATEGORY	INFORMATION
EXTERNAL PROPOSALS	n/a
EXTERNAL AWARDS	n/a
JOURNAL ARTICLES	n/a
BOOKS AND CHAPTERS	n/a
PUBLIC PRESENTATIONS, SEMINARS, LECTURES	(Central Region American Chemical Society Meeting, Synthesis Toward a Trigonal Pyramidal Sulfur Radical Supported by a Triarylborane, 06/29/19, Midland, Michigan)
AWARDS, PRIZES, RECOGNITIONS	n/a
INTERNAL COLLABORATIONS FOSTERED	n/a
EXTERNAL COLLABORATIONS FOSTERED	n/a
WEBSITE(S) FEATURING RESEARCH PROJECT	n/a
OTHER PRODUCTS AND SERVICES (e.g., media reports, databases, software, models, curricula, instruments, education programs, outreach for ND Energy and other groups)	n/a

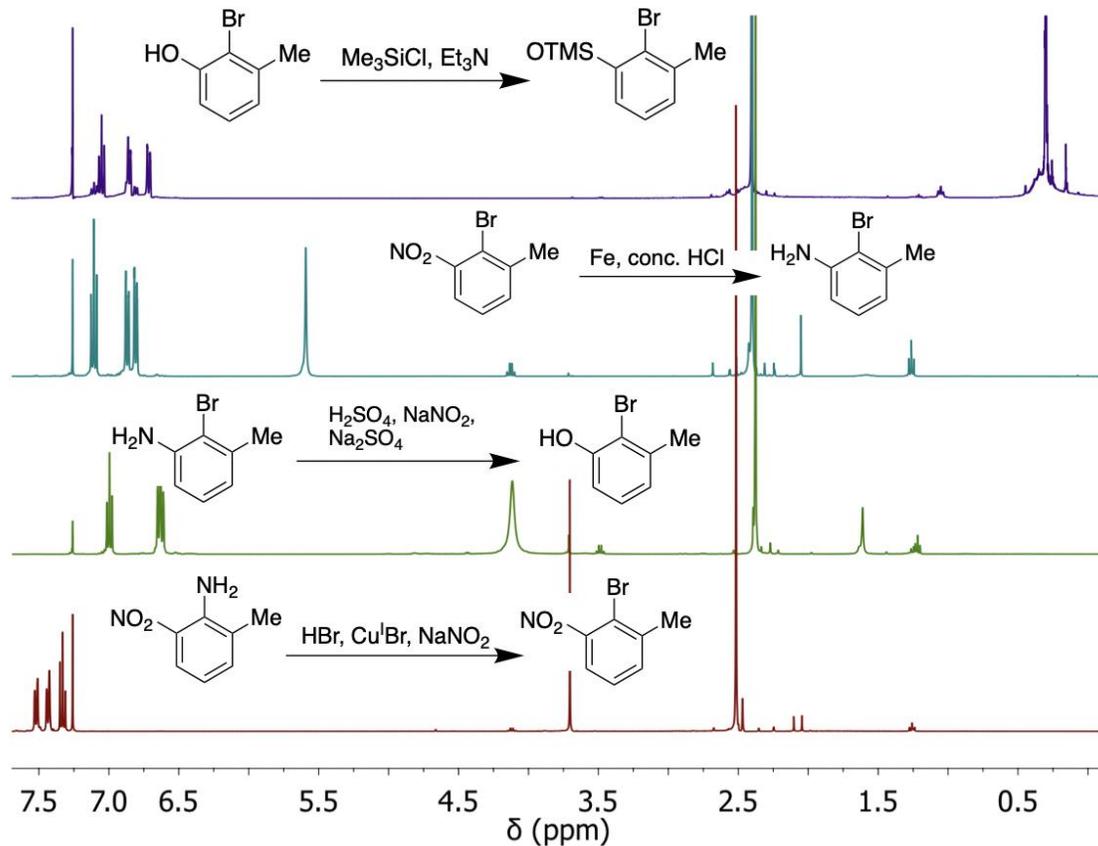
RESEARCH EXPERIENCE:

Please let us know what you thought of your research experience: Did this experience meet your expectations? Was there something else that could have been done to improve your research experience? Were lab personnel helpful and responsive to your needs? What could have been done differently, if anything, to achieve additional research results?

I greatly enjoyed my summer research experience at Notre Dame in the Tsui lab through the funding of the Slatt Fellowship. I have worked in this inorganic chemistry lab for a year and a half, but this summer I was granted the opportunity to devote all my time to my research project. This allowed me to make progress on my synthetic route, as well as experience lab culture and what a career in science may look like. This summer helped solidify my decision to continue after college to a PhD program. Unfortunately, I was not able to attend any of the Brown Bag lunches because I had a lab meeting during that time. Next year, maybe the times of these lectures can be varied to allow for more schedules to work. I found the socializing events such as speed friending and ice skating to be great ways to meet the other summer research students. I had very helpful lab mates and professors which made this experience even more enjoyable.

MAJOR GOALS AND ACCOMPLISHMENTS
(Additional Details, Technical Results, Charts and Graphics)

Current triaryl borane species synthetic route



Beginning synthesis of tris-pyrazole borate zinc thiolate

