

An Accidental Discovery: Investigating a New Reaction Scheme

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This summer I worked with Professor Carolyn Anderson, doing organic chemistry research in the lab. Professor Anderson's work is based in methodology; that is, she investigates how the pieces of a given reaction fit together to produce a given product. My work this summer focused on a new reaction that branches off from what Anderson has been doing in the past. Earlier in the year, she had stumbled upon a new compound when using an old bottle of solvent. The goal for my summer was to first figure out what was in this bottle that could be affecting the reaction, and then optimize the reaction conditions.

Quite soon after I began work, we were able to figure out that the bottle was contaminated and that the contaminant itself was the key to this new reaction. From there, I worked on optimizing the yields of the reaction. Day by day, this means running the reaction while varying the conditions, working up the reaction mixture and finally purifying it before testing to see how the yields would compare. We began the summer with yields of around 30%. I ran a large spectrum of catalysts with the reaction, varying in structure, steric bulk, and activity, and was able to find two that give consistent yields of around 50%. I have also begun the daunting task of optimization. I have varied temperature, amount of catalyst and amount of solvent. None of these have shown to be very impactful, but there is still a large variety of changes to the reaction conditions yet to be tested.

Overall, I am very happy with my work this summer. I feel that I have been productive in working toward a worthwhile goal and have very much enjoyed my time in the lab. I also feel that it has provided me with a wealth of experience that I can use in my future. It has allowed me a brief taste of research in the academic sphere, which is a possible future destination in my career. It has also given me a lot of practical experience in and out of the lab. I learned a ton of technical lab knowledge and also gained experience in sharing my research with others through the end of the summer presentation.

All in all, I feel that I have both contributed and learned a lot through doing this summer research at Calvin.