Sam Brooks
6/15/15
Elizabethtown College SCARP Program
Research Abstract

Exploring Regioselective Oxazole Formation through a Transition Metal Complex Catalyzed [3+2] Cycloaddition Reaction

Several organic fluorophores have been utilized in the study of luminescence-based sensors. One fluorophore, dapoxyl sulfonic acid (DSA), has a unique excited state that relates directly to its solvent sensitivity. However, DSA is very costly, difficult to synthesize, and has a lower solubility in organic solvents. Due to these disadvantages, the current study examines a preparation of DSA derivatives using a [3+2] cycloaddition between a terminal alkyne and an acyl azide under copper catalysis. This method has been reported to produce 2,5-diaryl oxazoles in high yields, with structures similar to DSA. An interesting observation was found in our lab and showed 2,4-diaryl oxazoles as an unprecedented byproduct when the acyl azide contained an electron rich aromatic ring. Based on these prior results, the goal is to explore this unexpected byproduct and optimize regiochemical control by attaining a better understanding of the reaction mechanism so that different derivatives can be examined to create diverse products.