**Novel Synthetic Route for Rhodamine and Rosamine Fluorophores**

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**ABSTRACT**

Fluorophores are molecules that are capable of absorbing and reemitting light of a different color. This property has made fluorophores attractive for a number of broad applications, particularly in scientific applications that require robust visualization techniques. Rhodamines and rosamines are classes of fluorophores, which have extensive applications as biological probes, laser dyes, and tracing agents for many aquatic environments. The attractive photo-physical properties of these fluorophores makes them very desirable for environmental studies, however, the current synthetic routes that are used to create these molecules are restrictive. Rhodamines rely on a century old acid-catalyzed Friedel-Crafts condensation method. While this method efficiently produces rhodamines, limitations in commercial materials has hindered the scope of rhodamines/rosamines that can be produced. Under the direction of Dr. Woydziak from Nevada State College, we seek to complete a novel synthetic route that will allow the creation of wide array of new rhodamine/rosamine derivatives by creating a set of six xanthones substituted with different amino groups, which upon addition of aryl Grignard, will give a series of rhodamines and rosamines. All of the targeted xanthone intermediate compounds have been synthesized successfully. The conversion off the xanthone precursors into rhodamines/rosamines will be carried out using existing methodology developed by Burges et al. Characterization and their viability for environmental and biological studies will be examined.