



HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

NASA TECHNOLOGY INFUSION

ROAD TOUR



AND MINORITY-SERVING INSTITUTIONS

Nevada State College

Andy Kuniyuki, Ph.D., Dean,
School of Liberal Arts and
Sciences



Office of
Small Business
Mentor-Protégé Program

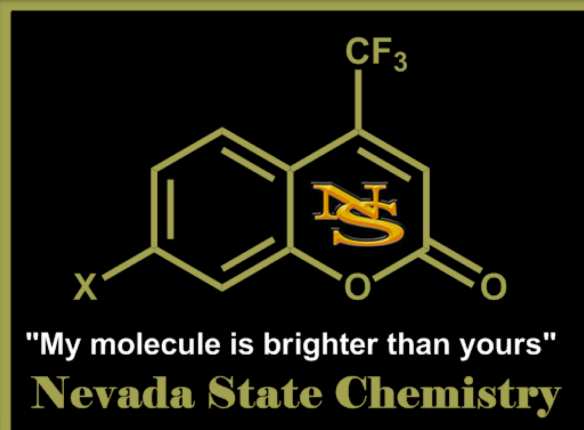
Technology Infusion Road Tour Presentation Outline

- Bachelor of Science in Biology, Bachelor of Science in Environmental and Resource Science
 - Concentrations: Cell & Molecular, Ecology & Evolution, Physiology
 - Biology, Cell Processes, Genetics, Evolution, Molecular Biology, Immunology, Endocrinology, Mammalian Physiology, Ecology, (Inorganic, Organic, and Biochemistry), Physics, Statistics
 - Environmental Science, Geology, Geographic Information System, Hydrology, Soils, Conservation Biology, Pollution, Desert Plants, Environmental Measurements & Analysis, Environmental Regulations, Law & Methods

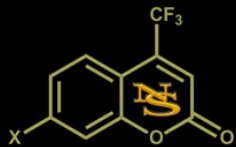
Technology Infusion Road Tour Presentation Outline

- Accomplishments
 - Created a new tool in Medicinal Chemistry – published as Juana Garcia, Jacob Sorrentino, Emily J. Diller, Daniel Chapman & Zachary Woydziak (2016) General method for nucleophilic aromatic substitution of aryl fluorides and chlorides with dimethylamine using hydroxide-assisted decomposition of N,N-Dimethylformamide, *Synthetic Communications*, 46:5, 475-481
 - Stabilized red fluorophore against photo bleaching

Nevada State College



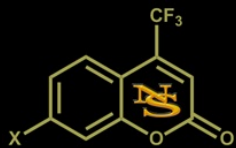
Zachary Woydziak, Ph.D.



Why Nevada State College?

- Supportive and Exciting Collegial Environment
- Teaching Focused
- Work with Diverse Groups
- Research with Undergraduate Students
- Build an Effective Chemistry Degree Program



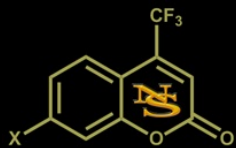


Teaching at NSC

Going beyond the normal classroom experience:

- Study Group Sessions
- Challenge Problems
- Trophy of Glory
- Firsthand use of “expensive” equipment





Research at NSC

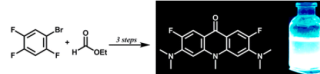
- Strong Undergraduate Research Program
- Primary Goal – To prepare students for professional programs and careers.



Synthesis of a Fluorescent Acridone Using a Grignard Addition, Oxidation, and Nucleophilic Aromatic Substitution Reaction Sequence

Samuel Goodrich, Miloni Patel, and Zachary R. Woydziak^{*}
Department of Biology, Nevada State College, Henderson, Nevada 89002, United States
J. Chem. Educ. **2015**, 92 (7), pp 1221–1225
DOI: 10.1021/acs.jchemeduc.5b009574
Publication Date (Web): April 30, 2015
Copyright © 2015 The American Chemical Society and Division of Chemical Education, Inc.
^{*}E-mail: zachary.woydzak@nsc.edu

Abstract

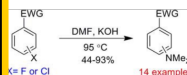


A three-pot synthesis oriented for an undergraduate organic chemistry laboratory was developed to construct a fluorescent acridone molecule. This laboratory experiment utilizes Grignard addition to an aldehyde, alcohol oxidation, and iterative nucleophilic aromatic substitution to form the final product. Each of the intermediates and the acridone product can be purified by common techniques available in most undergraduate chemistry laboratories. The synthesis was monitored by point, thin-layer chromatography, infrared spectroscopy, UV–vis spectroscopy. Yields for each transformation in the synthesis are (20–40%), and nearly all of the students (>90%) who attempted the synthesis were able to produce the final acridone product.

Original Articles

A general method for nucleophilic aromatic substitution of aryl fluorides and chlorides with dimethylamine using hydroxide-assisted decomposition of N,N-dimethylformamide

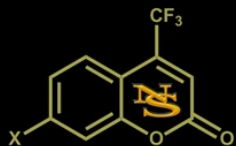
DOI: 10.1002/anie.201611470
Isabel Garcia^a, Jacob Sorrentino^a, Emily J. Dille^a, Daniel Chapman^a, & Zachary R. Woydziak^a
Publishing events and article dates explained
Accepted author version posted online: 09 Feb 2016



Abstract

A practical and convenient procedure for the nucleophilic aromatic substitution of aryl fluorides and chlorides with dimethylamine was developed using a hydroxide assisted, thermal decomposition of N,N-dimethylformamide. These conditions are tolerant of nitro, nitrile, aldehyde, ketone, and amide groups but will undergo acyl substitution to form amides for methyl esters and acyl chlorides. Isolated yields of the products range from 44–98%, with the majority being greater than 70% for seventeen examples.





Student Successes

<u>Position</u>	<u>Former Student(s)</u>
Medical School	Emily Diller (M.D. program), Crystal Lake (M.D. program), Jenny Reategui (D.O. Program)
Graduate School	Lynda Burns (Ph.D. program), Samuel Bassong (Ph.D. program), Maya Zawlodski (Ph.D. program), Jacob Sorrentino (Ph.D. program), Juana Garcia (Ph.D. program)
Pharmacy School	Noce Nayigihugu, Cheyenne Santee, Heungil Lee, Katrina Peninoy, Sampson Biru, Jed Anisco, Christian Heilman, Najma Ali, Waraluck Ogawa
Veterinarian School	Danielle Thomas
Dental School	Alex Audrus, Jihoon Kim
Other Positions	Nicole Vita (Research tech - St. Jude), Samuel Goodrich (Acting Director of the Student Academic Center at NSC)

