

Montague-CTE Scholar Lei Fang (2017-18) College of Science



Center for Teaching Excellence
DEAN OF FACULTIES

Synthesis and Characterization of Quinacridone Dye Teaches a Set of Key Chemistry Concepts

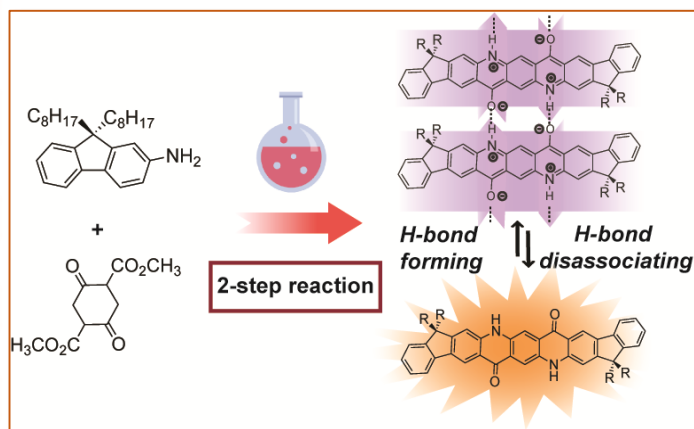
Imine Condensation

Imine-Enamine
Tautomerization

Aromatization

Friedel-Crafts Reaction

Column Chromatography



Hydrogen bonding

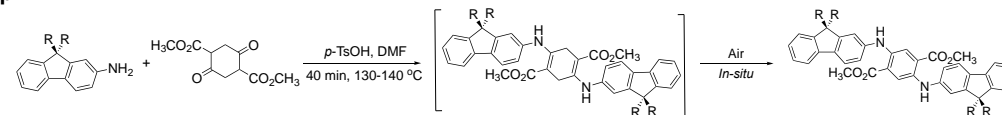
UV-vis Absorption

Fluorescence

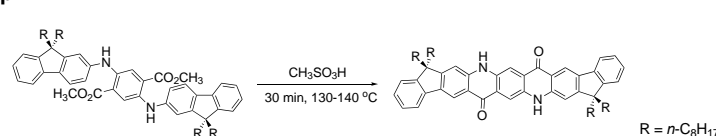
Resonance Structures

π -conjugation

Step I



Step II



Lab skills learnt by students:

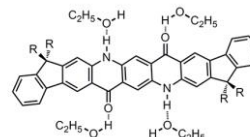
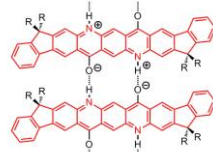
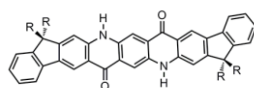
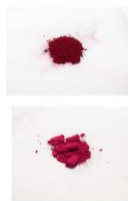
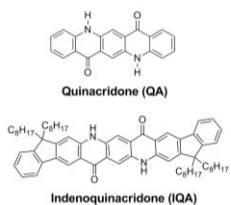
- Recrystallization
- Vacuum filtration
- Column chromatography
- Rotatory evaporator

Synthesis

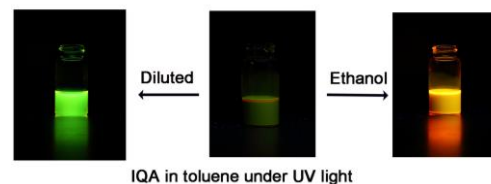
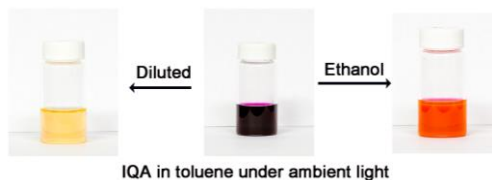
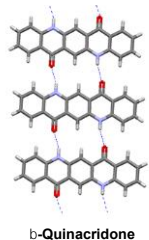
Purification

UV-vis Characterization

Fluorescence Change



Optical Properties Dependent on H-bonding Status



This experiment has been conducted for **3 semesters** in course *Organic Synthesis and Analysis IV* (CHEM 234) at Texas A&M University, involving **80 students** in total.

Summary of Students' Results			Post-Lab Quiz Question	Accuracy (%)
	Success Rate (%)	Median Yield (%)		
Step I	74	35	Imine Condensation & Aromatization	74
Step II	89	29	Friedel-Crafts Reaction	90
			H-bonding & Resonance	84