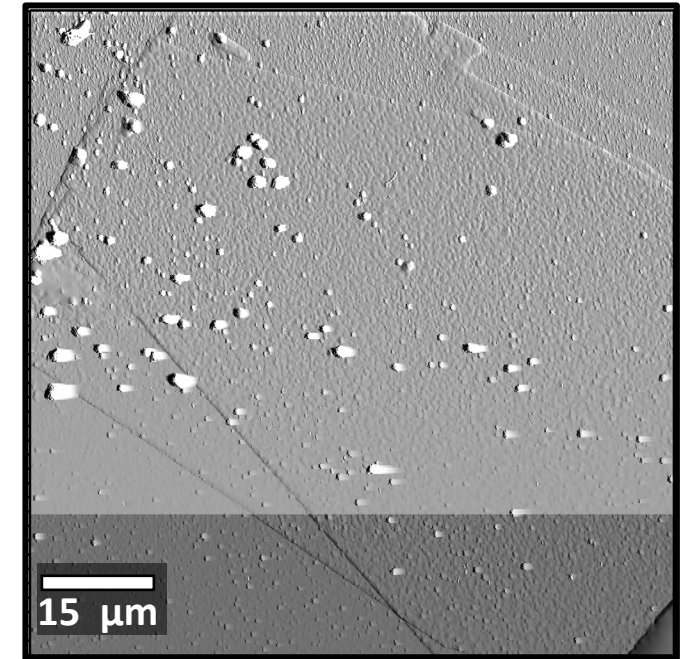
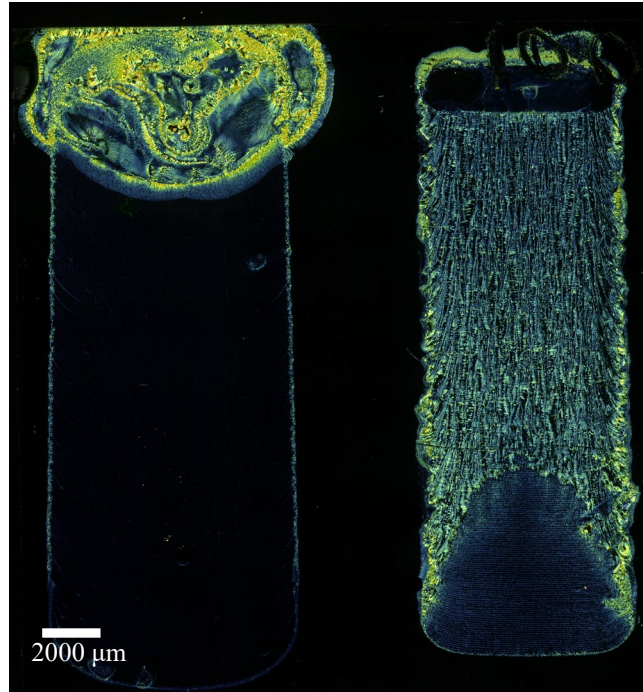
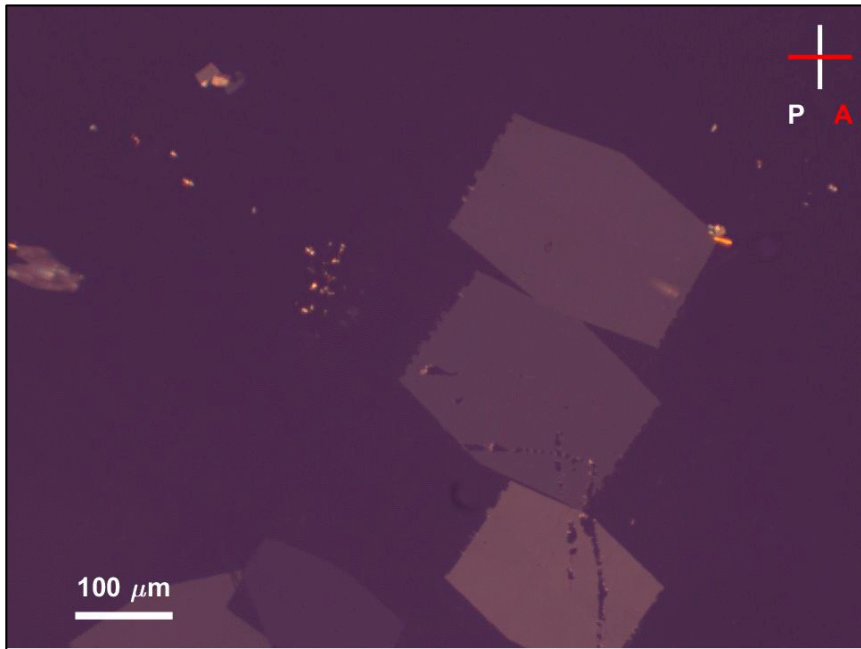




# Growth and Characterization of Crystalline Organic Thin Films for Optoelectronic Applications



*Samuel Fulbright*

Mentors: Dr. Lloyd Bumm, Dr. Madalina Furis

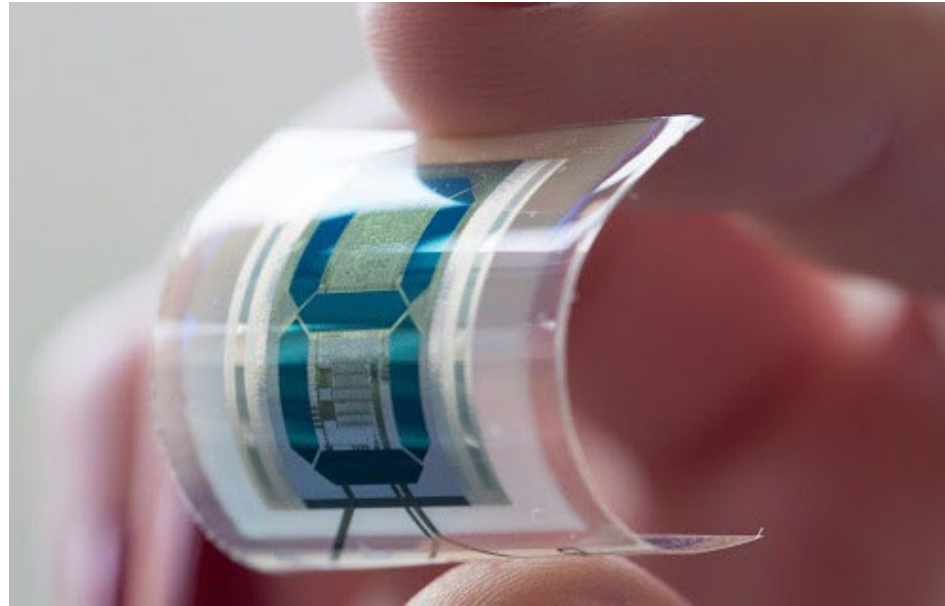
# Organic Materials as a Substitute for Silicon

## Advantages

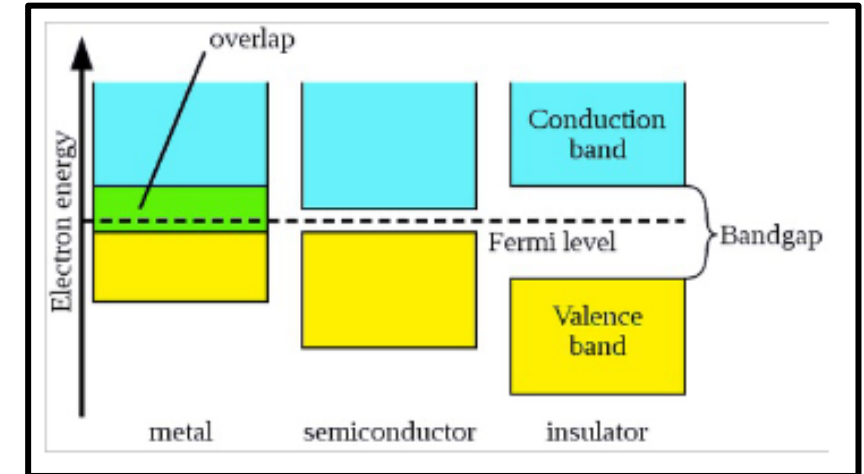
- Solution Processable
- Low Cost
- Biodegradable
- Flexible
- Lightweight
- Tunable

## Disadvantages

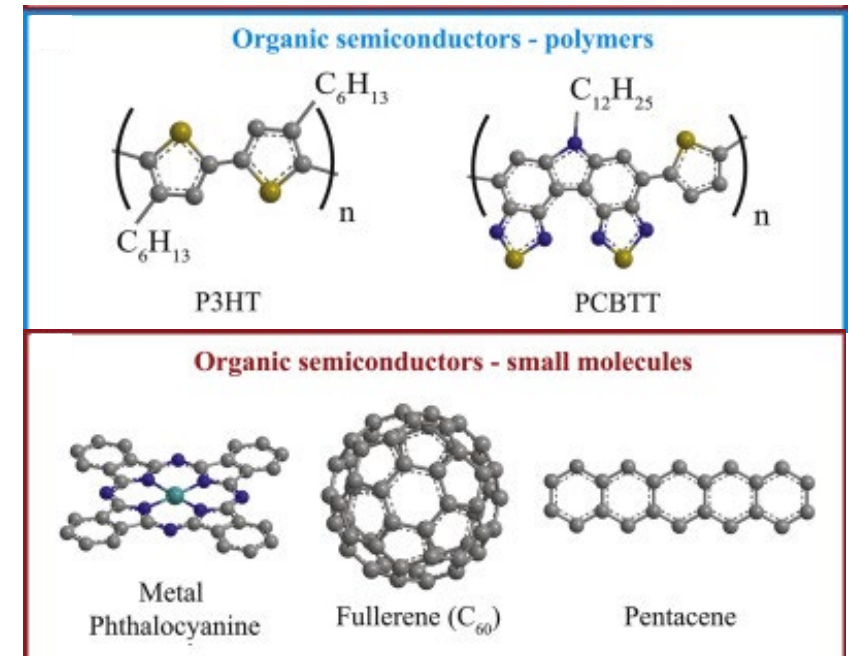
- Lower Electron Mobility
- Disorder



<https://www.eletimes.com/organic-semiconductors-for-flexible-electronic-devices>



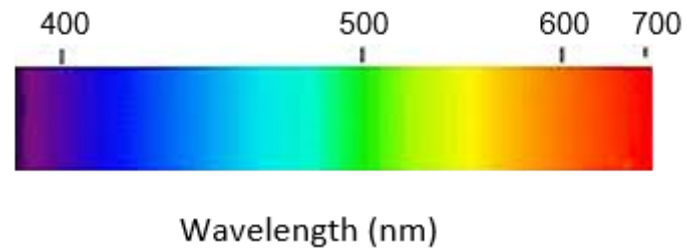
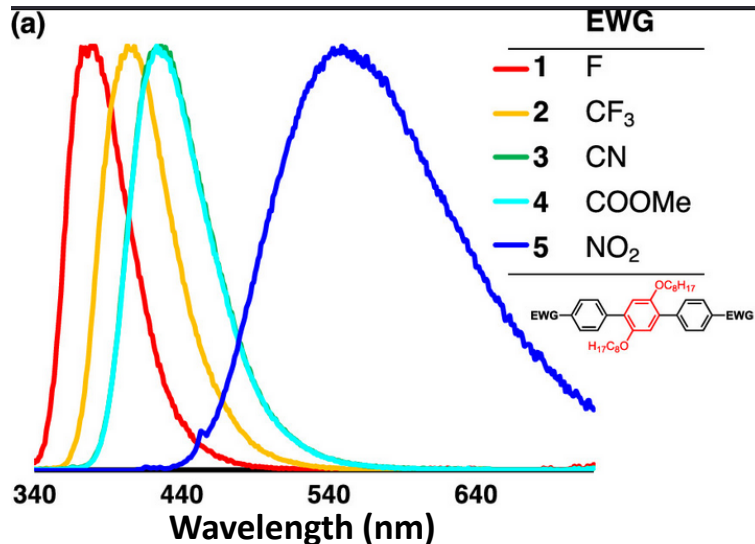
Matthew Schwartz Statistical Mechanics, Spring 2019 Lecture 14: Semiconductors



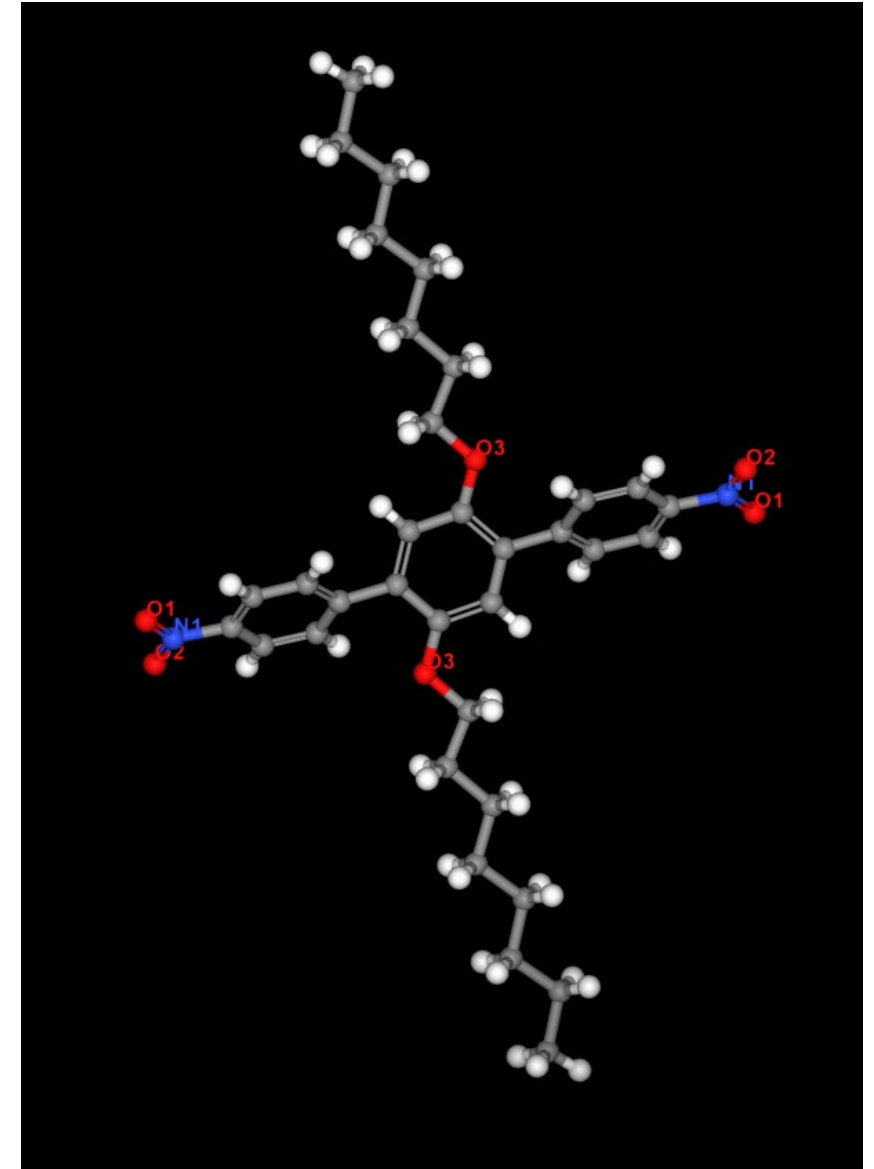
<https://www.sciencedirect.com/topics/chemical-engineering/semiconducting-organic-compound>

## Alkoxy-Substituted Quadrupolar Fluorescent Dyes

- Specific Absorption and Emission Spectra
- Modular structure



<https://web.pa.msu.edu/courses/2000fall/phy232/lectures/emwaves/visible.html>



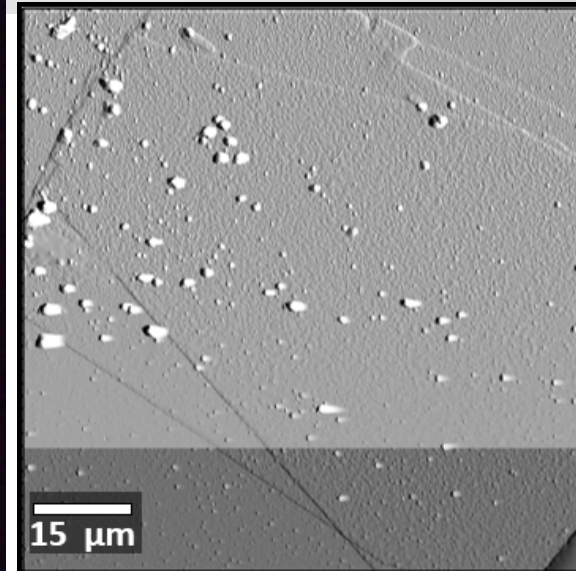
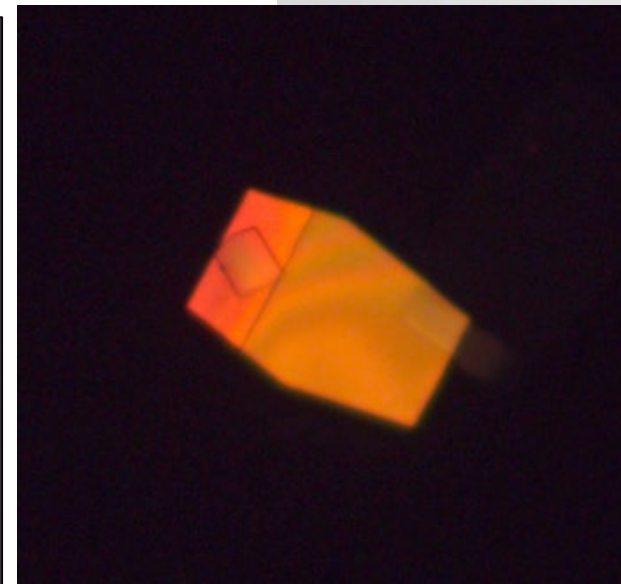
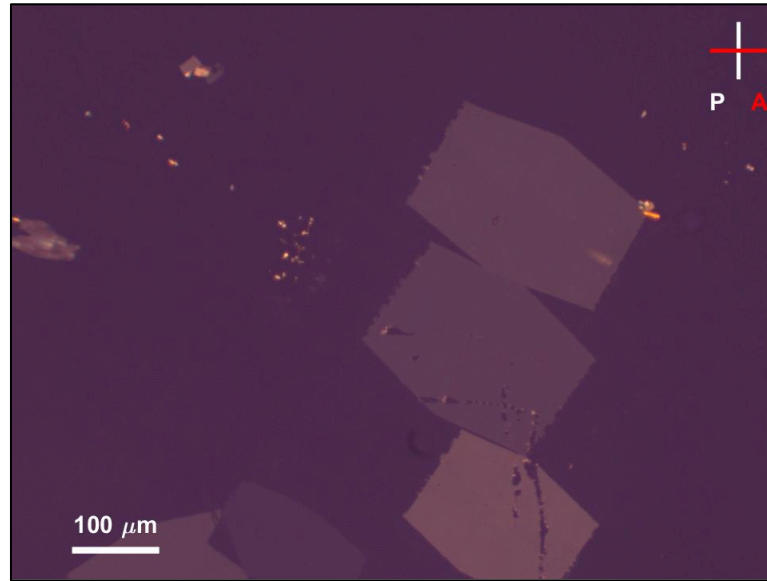
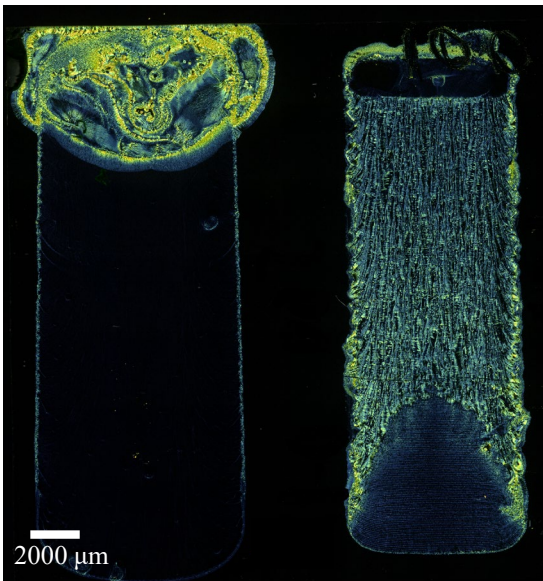
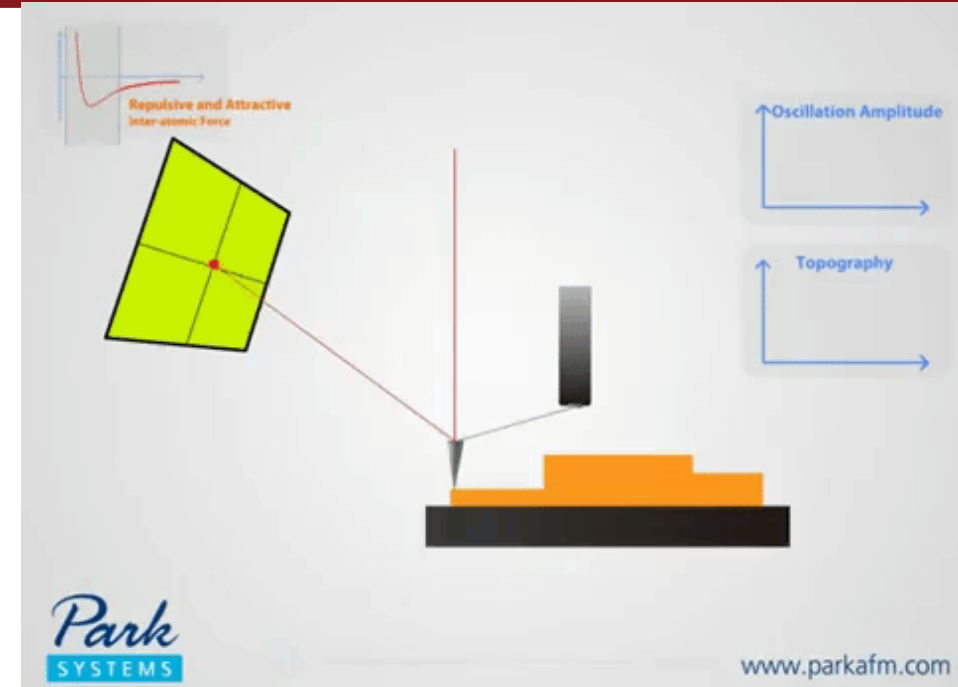
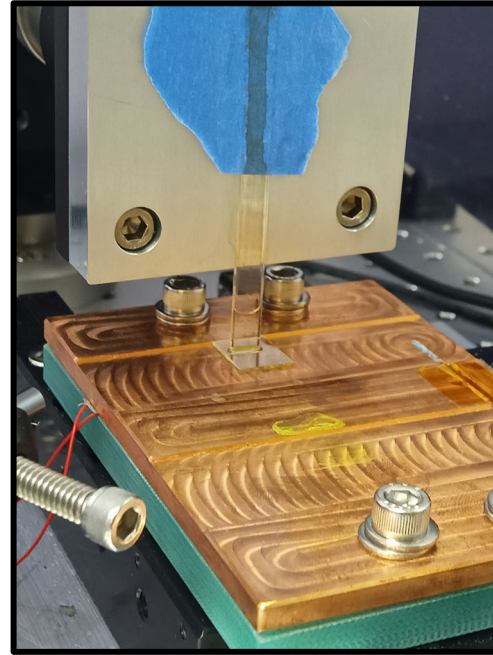
<https://www.ccdc.cam.ac.uk/structures/search?pid=ccdc:2097203&id=doi:10.1021/jacs.2c04906>

Feng et al. *Journal of the American Chemical Society* **2022** 144 (37), 16841-16854  
DOI: 10.1021/jacs.2c04906

# My Project This Summer

## Endgame: Characterizing Dye #5

- Printing Films
- Exfoliation
- Characterization
  - Optical Microscopy
  - Atomic Force Microscopy
  - Spectroscopy



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- Hilbi Akbar
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Questions?