PHOTOINDUCED AGGREGATION OF POLYTHIOPHENES

**Problem**
- Solubilizing alkyl chains on conjugated polymers are necessary to enable solution-based processing of optoelectronic devices.
- Soluble thin films of these materials, however, prevent all-solution multilayer film formation.
- Other drawbacks of solubilizing chains:
  - Occupy space with inactive atoms
  - Increase rate of photochemical decomposition

**Approach**
- Link long alkyl chains to polymer backbone through photocleavable groups.
- Allows removal of solubilizing chains with light

**Results Upon UV Photolysis**
- Red Shift: Polymer Aggregates In Solution
- Film Insoluble Upon UV Irradiation

**Future Work and Applications**
- Extend to other materials such as donor-acceptor polymers.
- Demonstrate all-solution processed multilayer film
- Photolithographic patterning of conjugated polymers.
- Investigate observed red-shift of benzyl ester side-chains on optical properties of materials.

Samuel W. Thomas III  
Tufts University Department of Chemistry, Medford MA