

The Synthesis of an Alkyl-Solubilized [9]Phenacene

[*n*]Phenacenes are polycyclic aromatic molecules composed of *n* fused benzene rings in a zigzag formation. Phenacenes may have conducting properties because of the nature of electrons in aromatic systems. Since they are essentially one-dimensional, phenacenes can be thought of as molecular wires and their conducting properties may be useful in nanotechnology. The Mallory group synthesizes phenacenes of varying lengths to explore effective synthetic strategies and the compounds' conducting properties.

Phenacenes previously synthesized by the Mallory group have had 3, 5, 7, and 11 fused benzene rings. My research target is to synthesize the first example of a [9]phenacene, as seen below. Long phenacenes are extremely insoluble, so alkyl groups are added to the structure to increase solubility. The core of the synthesis is bonding aromatics rings together. Complex stilbene molecules undergo photocyclization under ultraviolet light to form phenacenes. Other reactions in my synthetic scheme include Grignard, Friedel-Crafts, bromination, and Horner-Wadsworth-Emmons.

