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Solubilizing Imide Precursors for Poorly Soluble Polymers

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Summary: A method for making polyimides and other rigid conjugated polymers via soluble amide-ester precursors

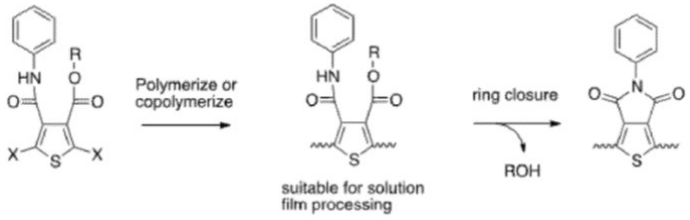
Description: Aromatic polyimides have attracted a lot of interest over the last few decades due to their exceptionally high chemical, photochemical, and thermo-oxidative stability, making them uniquely suited for a wide range of applications. Completely aromatic polyimides lack solution processibility and therefore are difficult to work with. This invention provides a method for making soluble precursors to imides, polyimides, and polymers containing imide groups. As a specific application, naphthalene and perylene imides and polyimides can be produced as thin films by solution casting. A soluble precursor that contains an ortho- or alpha- (in the case of naphthalene and perylene) substituted ester and amide is processed into a film or fiber for application and then converted into an aryl imide group with loss of the solubilizing ester group through reaction of the amide nitrogen with the ester. The resulting aryl imide is expected to confer electronic properties on the molecule and change the packing of the molecules. The method allows for imides and polyimides of naphthalene, perylene, and other conjugated molecules to be synthesized to make polymer and small molecule films and to combine electron accepting and electron donating groups in the same molecule.

Main Advantages of this Invention:

- High thermal stability compatible with high temperature processing
- Ability to more easily manipulate insoluble materials through a soluble precursor

Potential Areas of Application:

- Microelectronics
- Aerospace
- Liquid crystal displays
- Photoelectronics



ID number: # 13002

Intellectual Property Status: US utility patent pending (application #14/169,089).

Opportunity: Seeking an exclusive or non-exclusive licensee for implementation of this technology.

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