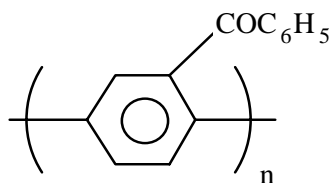


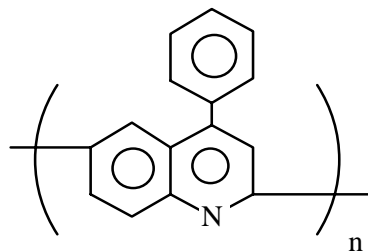
The CUNY Center for Advanced Technology In Photonics Applications (CUNY CAT)  
 Designated by NYSTAR, the New York State Foundation for Science, Technology and Innovation

## New Materials for Organic Light Emitting Diodes

A new light emitting diode material - poly(benzoyl-1,4-phenylene) (PBP) - has been synthesized. PBP is soluble in common organic solvents, has high thermal and photo stability and exhibits bright blue photoluminescence at about 450 nm. Light emitting diodes fabricated with PBP as the active layer emit blue electroluminescence with a peak wavelength at 446 nm and brightness of several hundred  $\text{cd/m}^2$  at room temperature. A second material - poly(2,6(4-phenyl quinoline)) (PPQ) - has been synthesized and characterized. PPQ shows excellent thermal and photo stability and is soluble in acidic solvents such as formic and acetic acids. These protonated polymers can be readily spin coated on glass plates. Films show bright photo and electroluminescence around 590 nm.



poly(benzoyl-1,4-phenylene)



poly(2,6 (4-phenyl quinoline))

### Applications:

- Electroluminescent devices
- Backlight for liquid crystal displays
- Display devices
- Imaging applications

### Benefits:

- High thermal and photo stability
- Ease of thin film fabrication using spin coating
- Potential use on flexible substrates

### The Technology:

Electroluminescence from organic compounds originates from the radiative decay of singlet excited states that are produced by the recombination of injected electrons and holes. The first bright and stable organic light emitting diodes were reported by Eastman Kodak few years ago. Since then, activity in the area of organic electroluminescence has been growing constantly. The first commercial displays utilizing organic light emitting diodes were announced in 1997 by Pioneer (Japan) and UNIAX (USA).

This technology opportunity sheet describes continuing efforts in this area. Several patents may have been issued or are pending and which may be available for licensing.

For Details, contact Alan Doctor; email: [alan.doctor@qc.cuny.edu](mailto:alan.doctor@qc.cuny.edu); Phone: 718-997-4279 Fax: 718-997-4278  
 Queens College • Razran 314 • 65-30 Kissena Boulevard • Flushing, NY 11367 [www.cunyphotonics.com](http://www.cunyphotonics.com)