



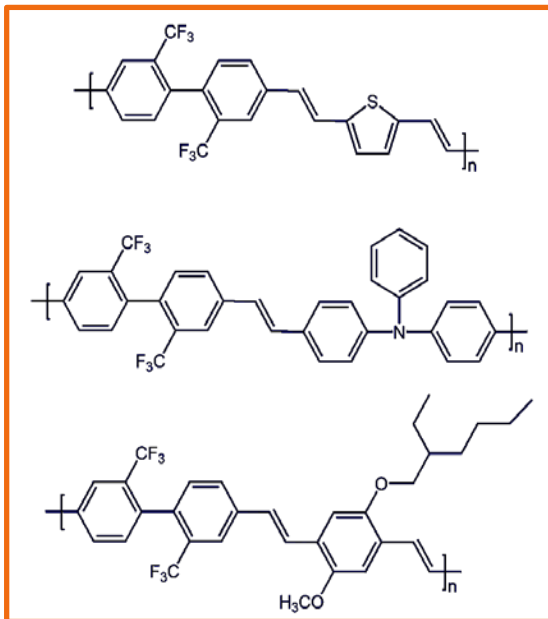
Organic Field-Effect Transistors



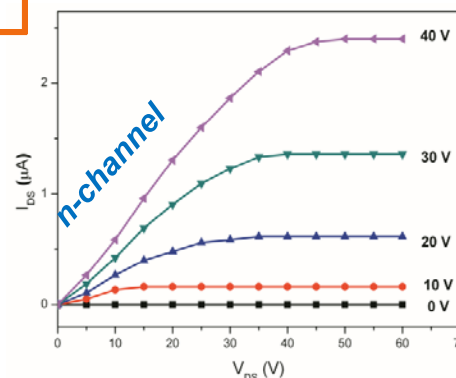
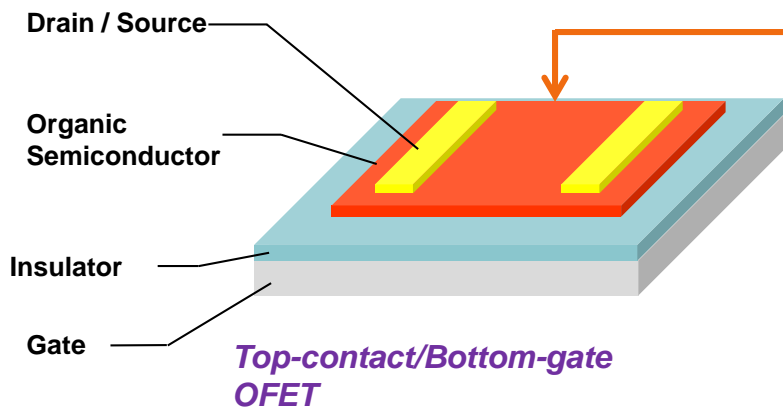
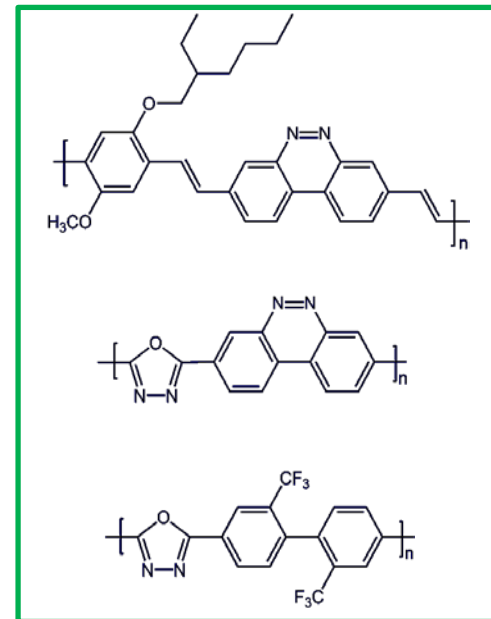
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Novel ambipolar materials



Novel n-type materials

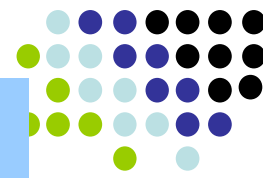


- High n-channel and balanced ambipolar mobility: μ_{hole} & μ_{electron} up to $10^{-2} \text{ cm}^2/\text{Vs}$
- Large On/Off ratio up to 10^6
- Excellent air-stability
- Organo-processable

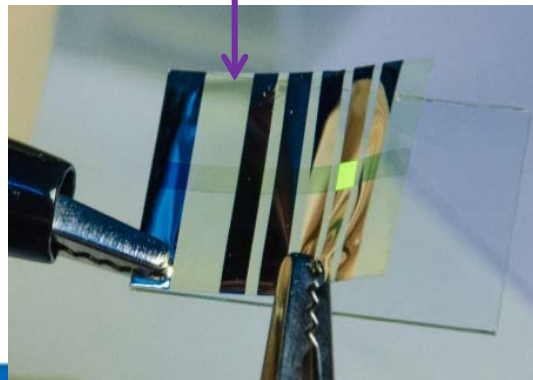
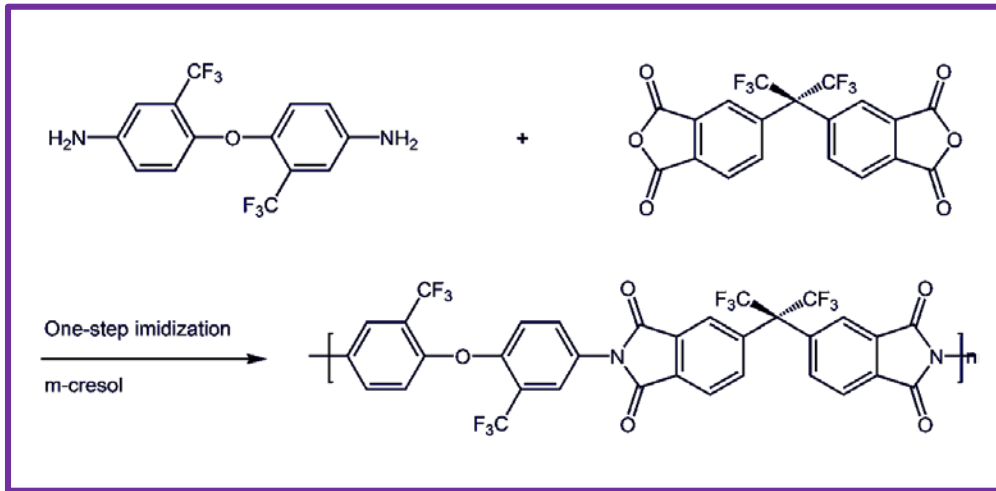


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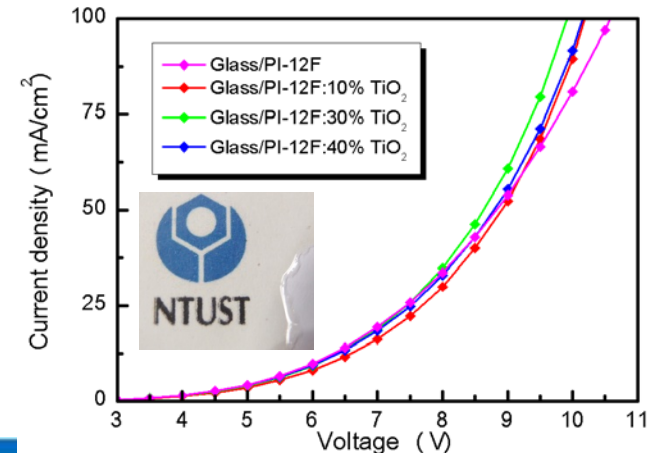
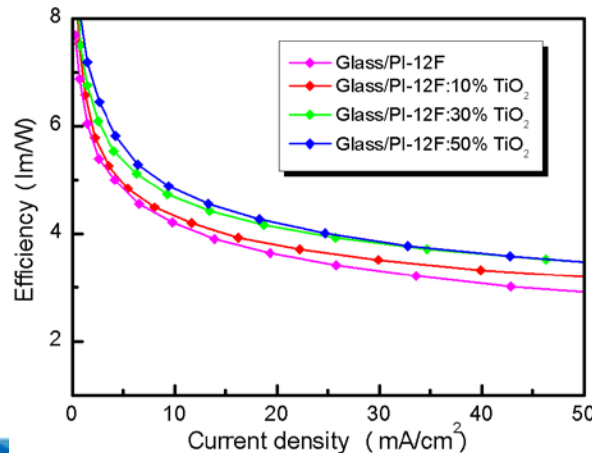
Flexible Organic Electronics



Novel polyimides for flexible OLED substrate

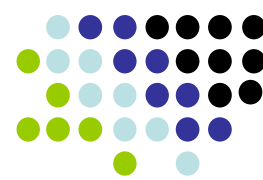


- **Organo-processable**
- **Excellent chemical, thermal stability and mechanical strength**
- **Excellent Flexibility**
- **Highly-transparent and colorless**
- **Tunable dielectric constant and refractive index with various nanoparticle**





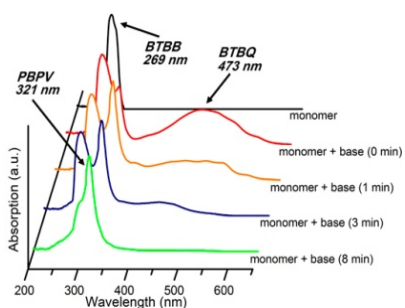
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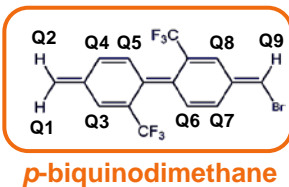
Design and Synthesis of Functional Monomers



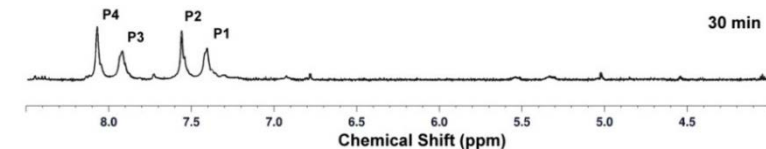
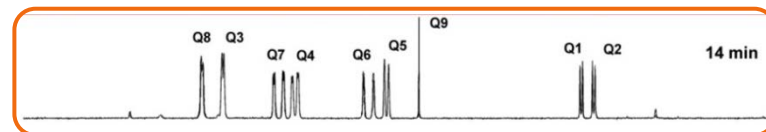
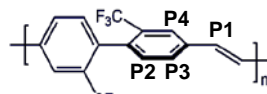
Addition of *t*-BuOK



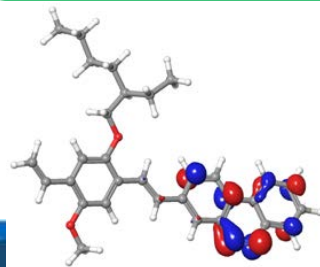
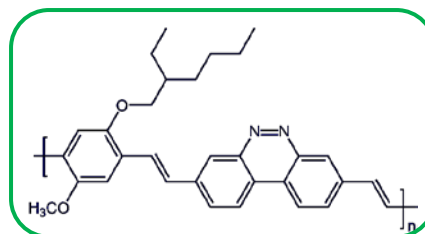
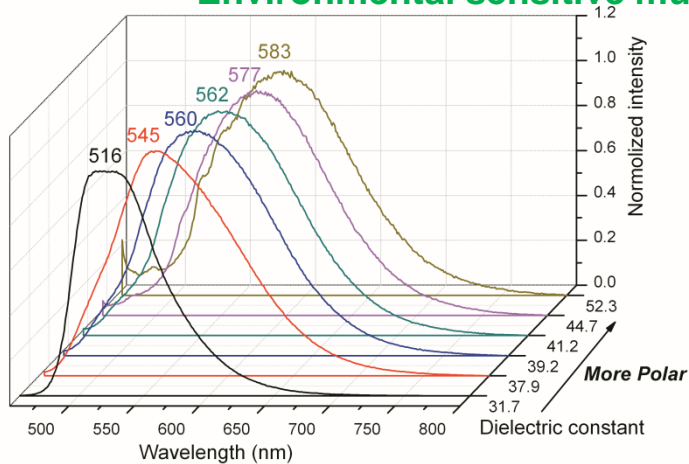
Identification of the *p*-biquinodimethane by in-situ ¹H-NMR and UV during the Gilch polymerization



Chain propagation
Macromolecular elimination



Environmental sensitive multi-color emission



Solvatochromism

Non-polar

Polar



Quinine sulfate
In 1N H₂SO₄

THF DCB DMAc NMP

Dilute solutions (10⁻⁵ M) on exposure to a UV lamp (365 nm)

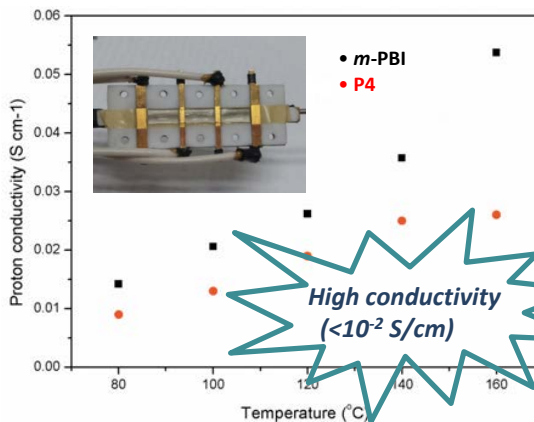
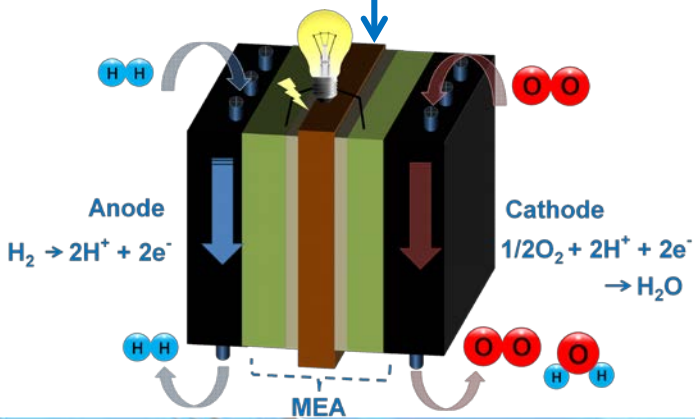
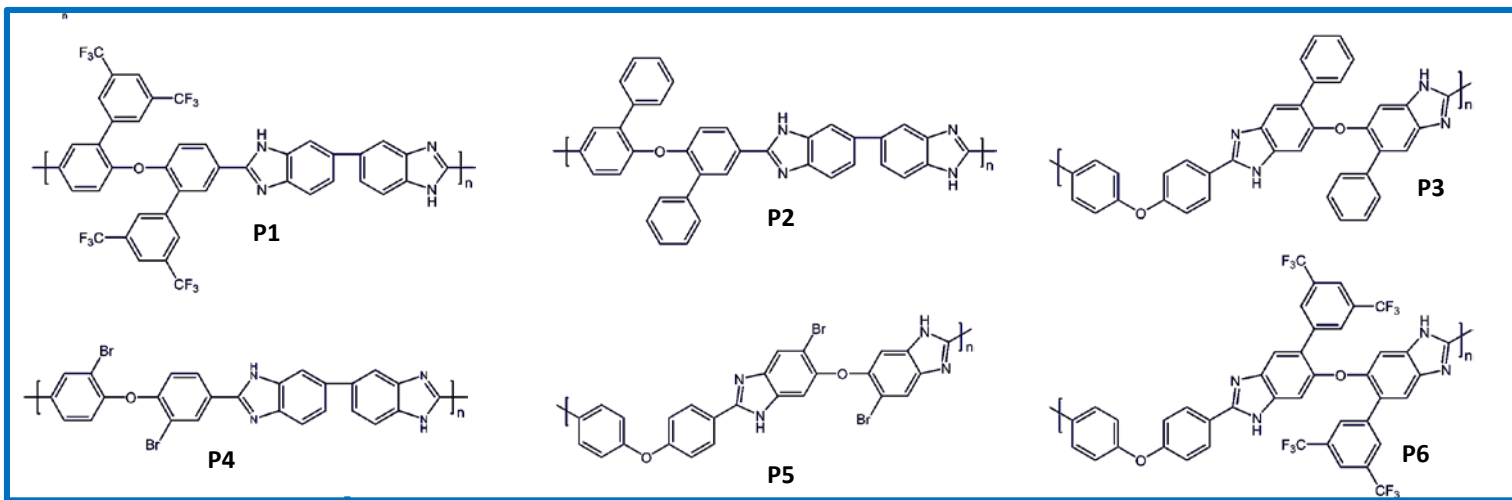


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Proton Exchange Membrane Fuel Cells

Novel polybenzimidazoles for high performance proton exchange membrane



- Excellent chemical, thermal stability and mechanical strength
- Organo-processable
- Rapid electrode kinetics
- Higher tolerance to CO