



## Advances in Organic Synthesis

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## Electroluminescence Polymers-a Review on Synthesis by Organic Compounds

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## Abstract

In the past, no one believed that polymers could prove to be effective Light-Emitting Diodes (LEDs). Very few research groups understood that the polymer light displayed semiconducting and electrical properties. However, it has been observed that the polymer LEDs can be used in many larger display arrays as they show mechanical flexibility and can be processed easily. The different polymers can be synthesised using reactive organic compounds, called monomers, which consist of a minimum of two functional groups. In this review, the researchers described a synthesis route for many organic monomers which can be converted to form LEDs. They have detailed the development of the polymers right from their inception. Furthermore, this review described the major mechanism related to light emission and all relevant problems associated with colour tuning. After investigating the polymer LEDs, the researchers noted that various light colours could be emitted efficiently, with uniformity and brightness. The colour of this emitted light was dependent on the band gap of  $\pi$ - $\pi^*$  transition, which seem to be the function of the structure of the polymer. Hence, any modification could affect the band gap and the colour that was emitted. For developing efficient PLEDs, many factors were considered, like stable radiative transitions for the singlet excitons, balance of electrons and holes and light extraction. It was seen that the fabrication of phosphorescence emitters using the triplet-triplet energy transfer approach was an effective strategy for obtaining a high-efficiency luminescence. This review also highlighted the main routes for the fabrication and processing of the

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