MAR05-2004-010094

Abstract for an Invited Paper for the MAR05 Meeting of the American Physical Society

Polymer Based Light Emitting Diodes (PLEDs) and Displays Fabricated from Arrays of PLEDs ALAN J. HEEGER, Institute for Polymers and Organic Solids, University of California, Santa Barbara, CA 93106

Semiconducting (conjugated) polymers are of considerable importance as the active materials in electronic and optical devices including polymer-based light-emitting diodes (PLEDs), photodetectors, photovoltaic cells, sensors, field effect transistors, and lasers. Because of the opportunities associated with passive and active matrix display applications, the development of PLEDs that show efficient, stable blue, green, and red emission is an important ongoing research effort. PLEDs which emit white light are of interest for use in high efficiency active matrix displays (with color filters) and because they might eventually be used for solid state lighting. The ability to fabricate large-area white light emitting PLEDs by processing the active materials from solution is an essential advantage (and requirement) for the use of PLEDs in solid state illumination. I will summarize progress in the field of PLEDs from the fundamental science to recent achievements.