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Title:	Investigation of Electroluminescence of Organic Light Emitting Diodes in the Strong Coupling Regime
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Keywords:	Electroluminescence Non-radiative energy Radiative
Issue Date:	28-Jul-2021
Publisher:	IISERM
Abstract:	Strong light-matter interactions give rise to intriguing possibilities like modify charge conductivity, radiative and non-radiative energy transfer of organic molecules. In this case, organic semiconductors are particularly attractive because of their progressive advancement in developing organic light-emitting diodes (OLEDs). In this thesis, the fabrication and characterization of organic semiconductor devices in a microcavity is discussed. Experimental and theoretical studies are available in the literature that discusses ON resonance coupling of emission band to modify electroluminescence. Such experiments have successfully tuned the color of the emission without changing the molecular structure. However, the concept of reshuffling the energy levels of OLEDs by vacuum field coupling has not been achieved so far in the literature. Current thesis focuses on the modification of the conduction band of an electroluminescence material by electronic strong coupling and understanding its effect on recombination process in the device. We have fabricated OLEDs in the Fabry-Perot cavity configuration and tune the cavity mode position to match with the electronic absorption of the active layer. Later part of the thesis discusses the opto-electronic properties of the microcavity-OLED device. Further optimization studies are required to achieve a best performing device.
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