Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C

Electronic Supplementary Information

Spectral-Resolving Capable and Integratable Multilayered Conductive Films via Inkjet Method

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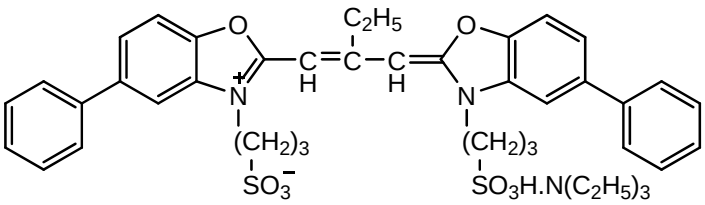
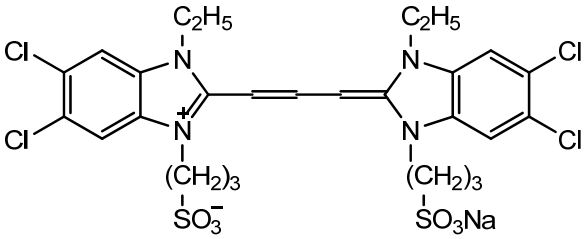
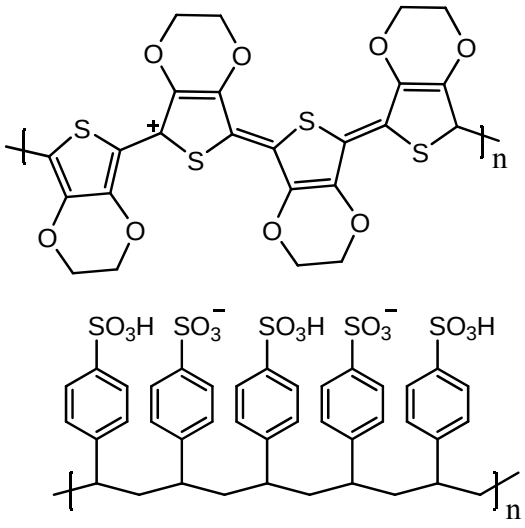
Materials: All reagents and solvents employed were commercially available and used as received without further purification.



(a)



(b)



(c)

Figure S1 Chemical structures of NK-1952 (a), NK-2203 (b), and PEDOT:PSS (c).

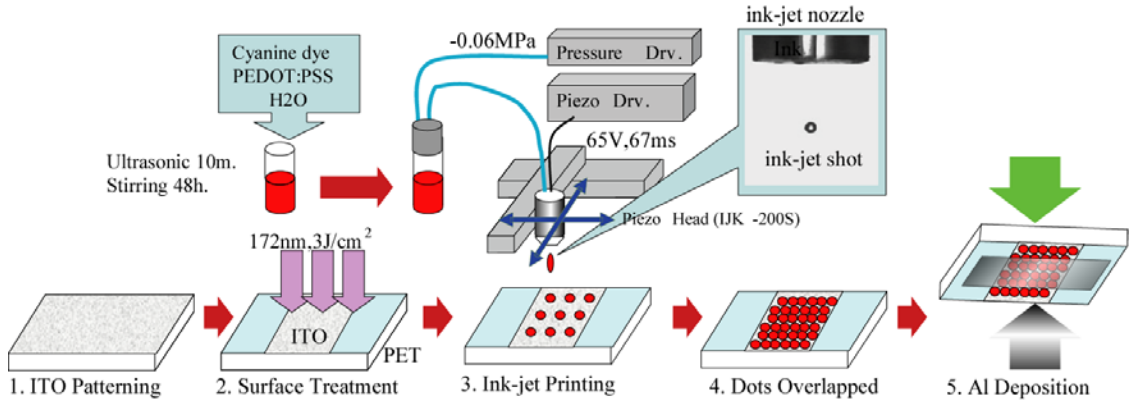


Figure S2 Fabrication process of photodiodes by inkjet printing.

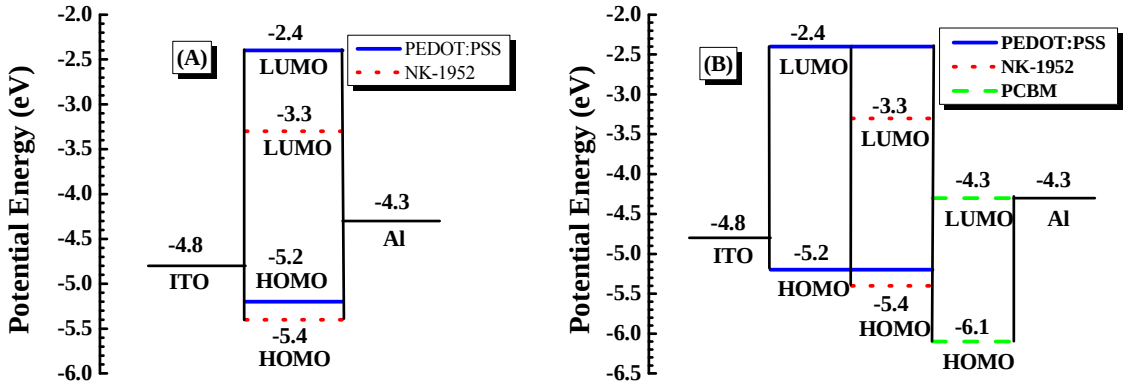


Figure S3 The HOMO, LUMO energy levels, and the workfunctions of the chemicals and electrodes of the two types inkjet printed photodiodes.

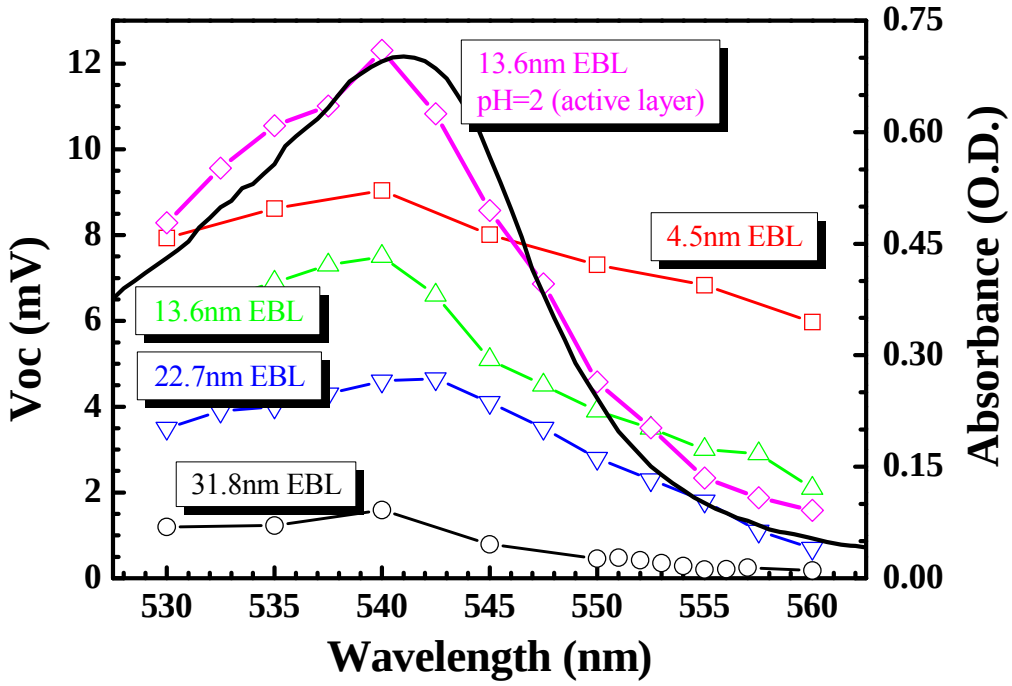


Figure S4 The Voc at various excitation wavelengthes of the NK-1952/PEDOT:PSS photodiodes in the multi-layer stacking scheme (active layer pH=7) with various HTL thickness, and the multi-layer stacked photodiodes (active layer pH=2) at the HTL thickness of 13.6 nm.

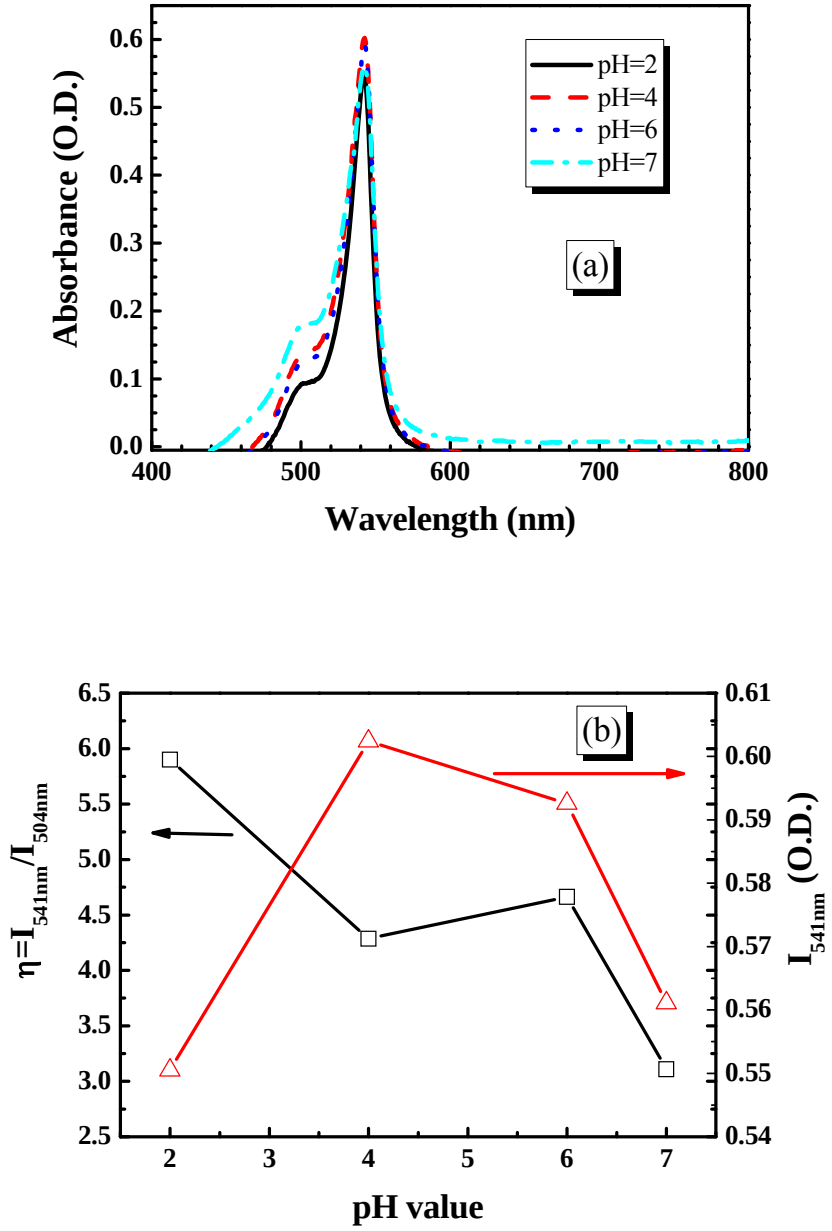


Figure S5 (a) Absorption spectra of NK-1952/PEDOT:PSS films printed by inkjet at various pH value and (b) dependence of η and absorbance on pH value.

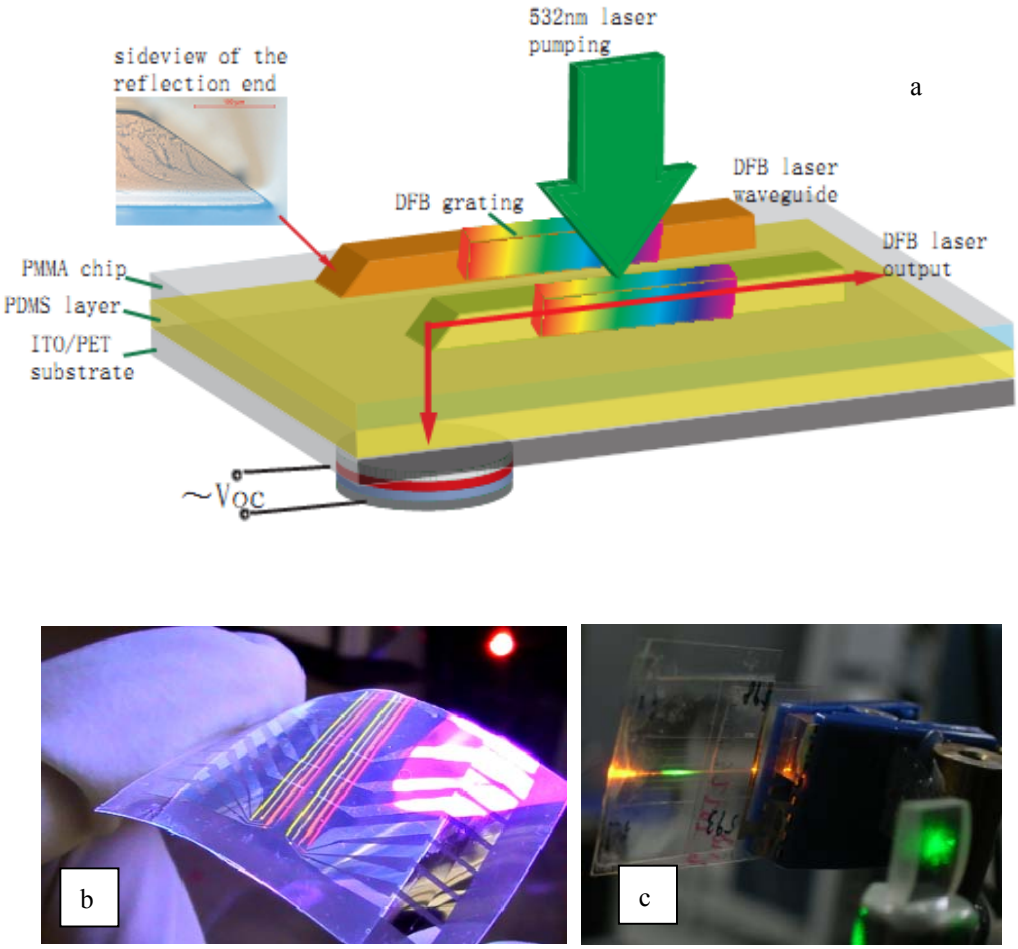


Figure S6 (a) Scheme of the integration of inkjet printed photodiodes with the channled waveguide laser chip. (b) An image of the laser chip with polymeric waveguide laser arrays doped with dyes in various colors by pen-drawing technique. (c) An image of the integrated laser chips with the inkjet printed photodiodes under the 532 nm laser pumping.

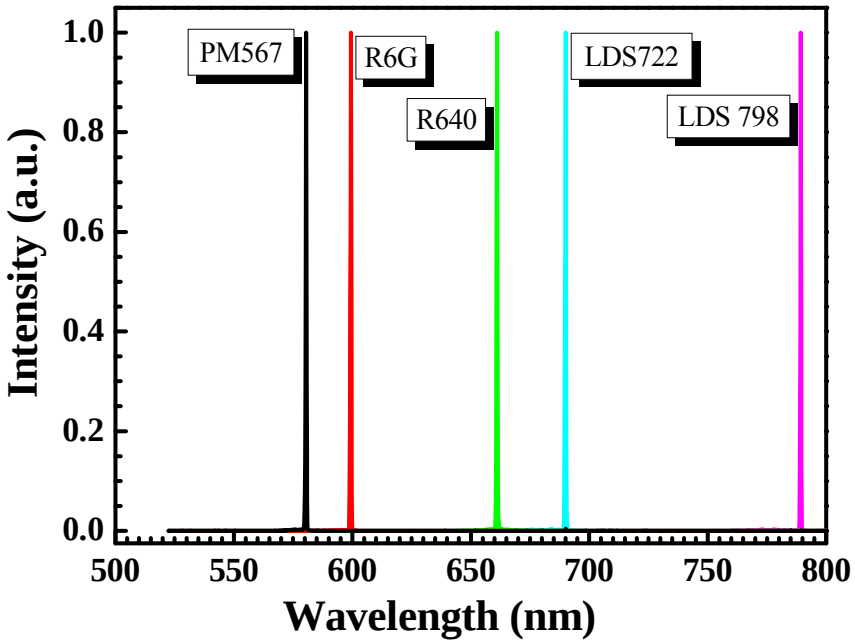


Figure S7 Laser spectra of the waveguides on integrated laser chips doped with various dyes.

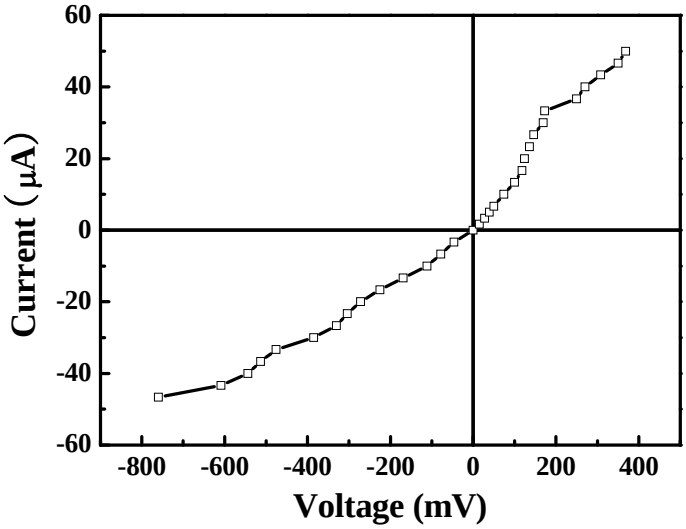


Figure S8. Current-Voltage characteristics of multi-layers stacked organic photodiodes based on NK-1952 by inkjet printing.