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Is 2D going to make Organic Electronics

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Graphene is a promising material for a wide range of applications especially in next-generation flexible electronic and optoelectronic devices duo to its electrical conductivity, optical transparency, flexibility and chemical stability. The versatility can be further enhanced by chemical modification. Iron chloride-doped graphene (GE) shows a remarkable combination of high electrical conductivity, optical transparency and robustness against high temperature, humidity and various solvents. These characteristics make it a competitive alternative to ITO in the race for next-generation flexible and transparent electrodes. In this talk I will demonstrate the performance of GE as both anode and cathode in polymer light-emitting devices (PLEDs) in comparison to ITO. The results show that PLEDs based on GE outperform the devices based on ITO electrodes in terms of device efficiency and stability. This results have an important implication that GE can replace ITO, low work function metal and noble metal in organic electronics, this opens up an avenue for the next generation of flexible, transparent and economically sustainable electrodes for a wide application in solar cells, display technology and solid state-light.

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