

Metal oxide transistors via polyethylenimine doping: Interplay of doping, microstructure, and charge transport

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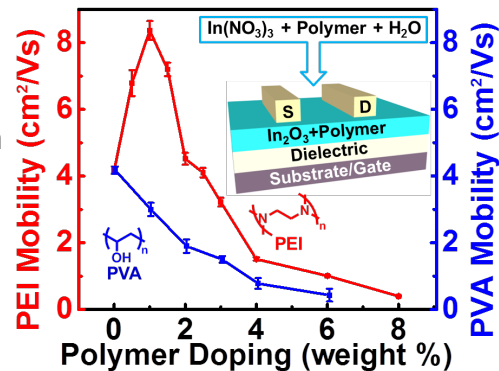
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Enhanced metal oxide (In_2O_3 , IZO, IGZO) transistor performance via polyethylenimine doping is demonstrated for the first time. Unlike previous doping methods for metal oxides, PEI doping not only effectively frustrates crystallization and controls the carrier concentration but also increases the electron mobility of MO matrix. The PEI electron donating capacity combined with charge trapping and variation in the matrix film microstructure result, for proper PEI doping levels, in high electron mobility and optimal TFT off-currents and threshold voltages.



W. Huang, *et al.*, *Adv. Funct. Mater.*, accepted.