Electrochromic effects in an ITO coated PET substrate

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Electrochromic effect was observed in an indium tin oxide (ITO) coated poly(ethylene terephthalate) (PET) substrate. A reddish color appeared at the interface between the ITO film and the PET substrate when a -4 V polarization was applied to the ITO/PET film in an organic solvent containing an electrolyte. The color change started at a small area and spread to the entire PET substrate when the potential was maintained over an extended period. When the voltage was removed, the color bleached slowly. Dissolution of PET and degradation of ITO was observed by Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS) analysis and resistance measurements.