

### Electrochemical fluorescence switching of redox active fluorophores

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The fluorescent poly(1,3,4-oxadiazole)s (POD) and tetrazine derivative (TZ) were examined for electro-optic device. Thin film of POD was prepared by solution process to give highly fluorescent film, of which emission intensity was switched on and off upon application of step potentials. The fluorescence switching of the POD showed molecular structure-dependent switching properties depending on the para- or meta-linkage, because the switching depends on electro-activity of POD itself. Using a photochemical reaction, the thin films of POD was directly patterned to give a fluorescent pattern. On the other hands, fluorescent switch of TZ was demonstrated with an electroactive fluorescent tetrazine blend in polymer electrolyte. TZ can be electrochemically reduced to a stable anion-radical state in solution and the re-oxidation of this species regenerated the initial neutral tetrazine upon completion of the reverse scan. Using this electro-activity, fluorescence switching of TZ was demonstrated upon application of external potentials.