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Electrochemical Doping of poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] using Polymerizable Ionic Liquids LAYLA MASRI, JANELLE LEGER, Western Washington University — A number of emerging organic electronic technologies utilize the mixed ionic/electronic conducting character of conjugated polymeric materials. We have developed a process by which fixed doping can be achieved in conjugated polymers through the formation of covalent bonds by replacing the salt used in traditional devices with polymerizable ionic liquids (PILs). It has previously been shown that poly[2-methoxy-5-(3',7'-dimethyl-octyloxy)-p-phenylenevinylene (MDMO-PPV) doped with allyltrioctylammonium allylsulfonate (ATOAAS) will produce a fixed junction light-emitting electrochemical cell due to the dissociation and subsequent immobilization of ATOAAS. We will discuss electrochemical doping of poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] (MEH-PPV) films with ATOAAS. We characterize these films via UV-Vis and cyclic voltammetry with emphasis on studying the formation of new mid-band gap energies associated with the color change observed when the film is electrochemically doped. We will discuss the mechanism for the formation of these mid-band gap energies and the applications of these films to developing technologies.

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