# An Electrochemically Driven Photonic Skin Using Functional Elastomer Electrolyte

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Recently, in the field of electronic skin (E-skin), research and development of a visualization touch sensor capable of instantaneously recognizing external physics stimuli have been actively conducted. Photonic skin is a sensor that can detect external stimuli by generating visual human-readable response through induced color and/or light intensity changes in electronic skin, which acts as human-machine interface.

Herein, we present an electrochemically driven photonic skin based on poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] (MEH-PPV) that shows electrochromic and light emitting features under low voltage condition. This is due to bandgap changes induced by shifting absorption range via redox reaction. Ionic liquid ([EMIM]+ [TFSI]-) and thermoplastic polyurethane (TPU) film prepared under an optimal condition, as a role of elastomer electrolyte, could serve an ion storage layer and also enable a freestanding structure. As a result, we expect that our photonic skin can be applicable to digital tactile sensors under dark/light atmosphere, simultaneously.