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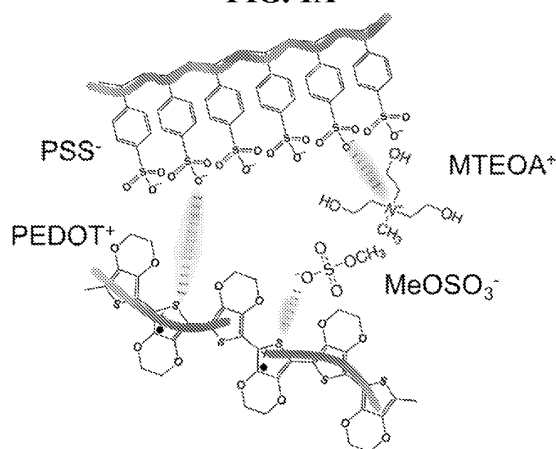
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(54) Title: **BIOCOMPATIBLE IONIC LIQUID IN SEMICONDUCTING POLYMER**

FIG. 1A



(57) **Abstract:** Herein disclosed is a biocompatible composite comprising a semiconducting polymer having an electrically conductive domain and an electrically insulating domain coupled to the electrically conductive domain, and a biocompatible ionic liquid doped in the semiconducting polymer, wherein the biocompatible ionic liquid renders a portion of the electrically insulating domain distal from the electrically conductive domain to expose a portion of the electrically conductive domain. A method of forming the biocompatible composite is disclosed herein, the method comprising providing a semiconducting polymer having an electrically conductive domain and an electrically insulating domain coupled to the electrically conductive domain, forming an aqueous solution comprising the biocompatible ionic liquid, and mixing the semiconducting polymer and the aqueous solution. Here disclosed use of the biocompatible composite in an organic electrochemical transistor, a wearable device, and an electrocardiogram recording device, and their methods of forming the organic electrochemical transistor, the wearable device, and the electrocardiogram recording device.

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