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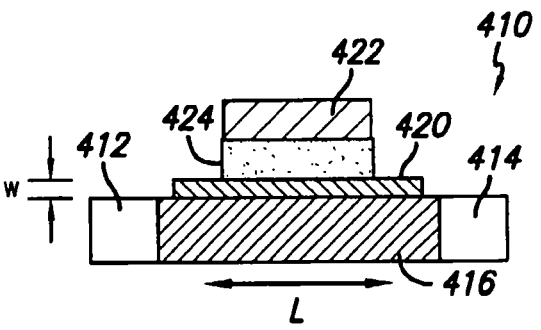
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(54) Title: TRANSISTOR AND SENSORS MADE FROM MOLECULAR MATERIALS WITH ELECTRIC DIPOLES



(57) Abstract: A polarization-dependent device is provided that includes organic materials having electric dipoles. The polarization-dependent device comprises: (a) a source region and a drain region separated by a channel region having a length L, formed on a substrate: (b) a dielectric layer on a least a portion of the channel region; and (c) a molecular layer on the dielectric layer, the molecular layer comprising molecules having a switchable dipolar moiety. Addition of a gate over the molecular layer permits fabrication of a transistor, while omission of the gate, and utilization of suitable molecules that are sensitive to various changes in the environment permits fabrication of a variety of sensors. The molecular transistor and sensors are suitable for high density nanoscale circuits and are less expensive than prior art approaches.



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