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Understanding the electro-stimulated deformation of PVC gel by in situ Raman spectroscopy

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Abstract: Electro-responsive materials are of promising applications in microdevices. A dioctyl terephthalate (DOTP) plasticized polyvinyl chloride (PVC) gel actuator driven by unilateral electrodes was proposed, with which the dynamical creeping deformation of the gel around the anode by electro-stimulation was investigated by in situ Raman spectroscopy. The obtained results reveal that the intensity of the band at 1612 cm^{-1} was linearly correlated to the ratio of DOTP in PVC gel. The plasticizer concentration evolved after an external electro-stimulation was applied, which indicates the migration of plasticizer around the anode. The migration of the plasticizers to the two sides of the anode consequently drives the

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