

High-Performance Ionic Polymer Actuator for Soft Haptic Feedback

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Recently, an ionic electroactive polymer (i-EAP) actuators are spotlighted in various soft electronics such as robotics and haptics due to a lot of advantages. In particular, for soft haptic feedback, it is required to show high performance in a wide bandwidth. In this talk, we describe an i-EAP actuators operating a wide bandwidth by introducing interface of fibrillar nanostructures between ionic polymer and PEDOT:PSS electrodes adding ionic liquid and polar solvent. As a results, the i-EAP actuators was successfully operated with a large displacement up to 2.5mm at an operating frequency of 20mHz under an applied voltage of 2V. Futher, it shows large blocking force of 0.4mN at operating frequency of 1Hz. These our actuator have a wide bandwidth up to a high frequency of 200Hz and shows an improved blocking force up to 0.4mN. We expect that our actuator will be effective way to implement an efficient engineering design for soft haptic feedback under electrical stimuli.