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Effect of Elastomers Types to the Dielectrophoresis Force and Electromechanical Responses RUKSAPONG KUNANURAKSAPONG, ANUVAT SIRIVAT, The Petroleum and Petrochemical College — Electroactive polymers have been well known as materials for using in many applications such as actuators, MEMS devices, and artificial muscles. In our work, we investigated the effect of elastomers type on the dielectrophoresis force and the electromechanical responses at various electric field strengths. The specimens were prepared by solvent casting method and cut into thin films. We studied the dielectrophoresis forces of all elastomers by measuring the deflection distance under various electric field strengths (0-600 V/mm), and calculated the force from non-linear deflection theory of cantilever. Our data show that the electromechanical responses and the dielectrophoresis forces of all elastomers increase almost linearly with increasing electric field strength. The acrylic elastomers (AR71) has the lowest electrical yield point (75 V/mm) and it generates the highest force (389 μN at $E = 600$ V/mm). On the other hand, AR70 had the highest electrical yield point (300 V/mm) and it generates the lowest force (321 μN at $E = 600$ V/mm). The dielectrophoresis forces appear to depend on several factors such as dielectricity, electrical conductivity, and the storage modulus of elastomers.

Anuvat Sirivat
The Petroleum and Petrochemical College

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