

Abstract Submitted
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Dielectrophoresis Force and Deflection of Dielectric Elastomers and Blends under AC field RUKSAPONG KUNANURAKSAPONG, ANUVAT SIRIVAT, The Petroleum and Petrochemical College — The effects of frequency and amplitude of AC electric field on the deflection distance and the dielectrophoresis force of the of acrylic elastomers (AR71), styrene copolymers (SAR and SBR), and blends with poly(p-phenylene) (AR71:PPP and SAR:PPP) were investigated. The dielectrophoresis forces of the dielectric elastomers and blends were measured by a vertical cantilever under various frequencies (0.3-60 Hz) and at the amplitudes of 200, 300, 500, 600 and 800 Vpp/mm. In addition, the effect of thickness of specimens and the particle concentration on the dielectrophoresis force were studied. Poly(p-phenylene) particles were added into AR71 and SAR with particle concentrations of 5, 10, 15 and 20 vol%. The forces were calculated from the non-linear deflection theory of the cantilever. The dielectrophoresis forces and deflection distances of the dielectric elastomers and blends generally increase with increasing amplitude but slightly decrease with increasing frequency, and they dramatically drop at the cut-off frequency. The cutoff frequencies are 12.0, 1.5 and 1.5 Hz for AR71, SAR, and SBR, at $E = 800$ Vpp/mm, respectively.

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