

Abstract Submitted  
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**Effect of Temperature on the Electromechanical Properties of Elastomers** RUKSAPONG KUNANURUKSAPONG, Chulalongkorn University — Acrylic elastomers, SAR, and SIS thin sheets are fabricated through solvent casting and tested towards electroactive applications such as artificial muscle and/or MEMS devices. Experiments were carried under the oscillatory shear mode with applied electric field strength varying from 0 to 2 kV/mm. The effect of temperature on the storage and loss modulus ( $G'$  and  $G''$ ), storage modulus sensitivity ( $\Delta G'/G'_0$ ), electrical conductivity, and dielectric permittivity of acrylic elastomers (AR70, AR71, and AR72), SAR and SIS D1112P are studied between 300-360 K. SAR possesses the highest storage modulus sensitivity, 104%, whereas AR72 has the lowest storage modulus sensitivity of about 21.5% at  $E = 2$  kV/mm. AR71 has the highest dielectric permittivity ( $\epsilon'$ ) of 39.31 pF/m, whereas SIS D1112P has the lowest dielectric permittivity of about 20.74 pF/m. The electrical permittivities of the elastomers increase with increasing temperature. There is a correlation between the storage modulus sensitivity of the elastomers and their dielectric constants.

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