

## **Dielectric polymer gels as an electrically active soft actuator**

Toshihiro Hirai

Polymer gels have been considered to be efficient actuator. In this presentation, dielectric polymer gels and elastomers will be introduced as electrically active actuator. Polymer gels are ranging from highly swollen polymer gels to plasticized polymer gels. Elastomers are also investigated as comparison. We found most polymer materials can be an efficient electrical actuator. Some of the plasticized polymers can show a huge strain such as hundreds percent and can restore their original shapes when the electric field was off. Most of the features can be originated from colossal dielectric constant that can be induced through the interaction between polymer and plasticizer. These materials also possess electro-optical and piezo-electric functions.