

MODEL REFERENCE ADAPTIVE CONTROL OF IONIC POLYMER METAL COMPOSITE ACTUATORS

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Ionic Polymer Metal Composite (IPMC) is a smart polymer material. IPMC forms an important category of electroactive polymers. IPMC have actuation capabilities which have applications in biomechatronics and in underwater applications. This paper presents a control system for tracking control of an IPMC actuator. The control purpose is to drive the displacement of the IPMC actuator to track the desired position of the reference model. A physics based, geometrically scalable model of the IPMC actuator is used. A model reference adaptive controller is formulated based on the model. The effectiveness of the control scheme is confirmed by simulation using MATLAB software.

