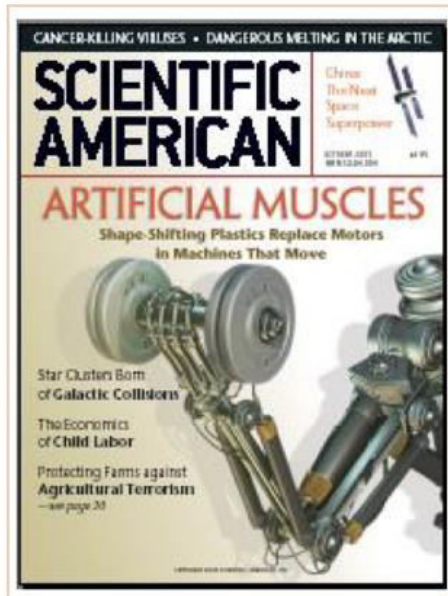


MSc Graduation Project

Experimental Work on Ionomer Polymer Metal Composites (IPMCs) Smart Material Actuators



IPMCs are smart composite materials (sometimes also referred to as a type of 'Artificial Muscle') that can transduce electrical energy into mechanical, and thus, can be used to move and/or control structures.

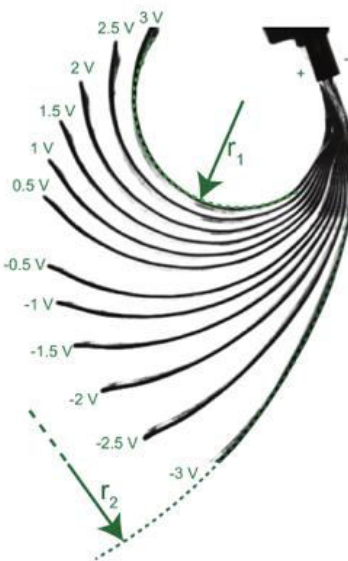
They are tri-layered composites that are comprised of: Metal Layer- Polymer- Metal Layer, and when a Voltage is applied to the metal plates, bending is induced.

► bidirectional bending:

<https://www.youtube.com/watch?v=TbPtwnN5n5c>

► slow to fast bending:

<https://www.youtube.com/watch?v=5tCf0nfi-yc>



Potential Project Options: Actuator fabrication and testing, fabrication of soft robotic structures with incorporated actuators, simulation of actuator excitation, simulation of soft robotic structures with incorporated actuators e.g. simulation of a peristaltic pump with IPMC actuators incorporated into pump walls and optimisation of actuation of pump wall movement etc.

IPMC artificial muscle

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