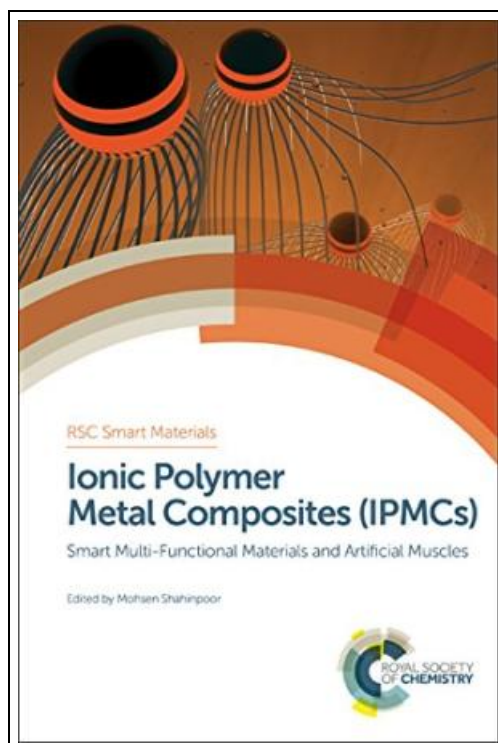


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Royal Society Of Chemistry, United Kingdom, 2015. Hardback. Condition: New. Language: English . Brand New Book. Ionic polymer metal composites (IPMCs) can generate a voltage when physically deformed. Conversely, an applied small voltage or electrical field can induce an array of spectacular large deformation or actuation behaviours in IPMCs, such as bending, twisting, rolling, twirling, steering and undulating. An important smart material, IPMCs have applications in energy harvesting and as self-powered strain or deformation sensors, especially suitable for monitoring the shape of dynamic structures. Other uses include soft actuation applications and as a material for biomimetic robotic soft artificial muscles in industrial and medical contexts. This comprehensive set on ionic polymer metal composites provides a broad coverage of the state of the art and recent advances in the field written by some of the world s leading experts on various characterizations and modeling of IPMCs. The first two chapters cover the fundamentals of IPMCs and methodologies for their manufacture, followed by specific chapters looking at different aspects of actuation and sensing of IPMCs. These include uses in electrochemically active electrodes, electric energy storage devices, soft biomimetic robotics artificial muscles, multiphysics modeling of IPMCs, biomedical applications, IPMCs as dexterous manipulators and tactile sensors for minimally invasive robotic surgery, self-sensing, miniature pumps for drug delivery, IPMC snake-like robots, IPMC microgrippers for microorganisms manipulations, Graphene-based IPMCs and cellulose-based IPMCs or electroactive paper actuators (EAPap). Edited by the leading authority on IPMCs, the broad coverage of this book will appeal to researchers from chemistry, materials, engineering, physics and medical communities interested in both the material and its applications.

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