

Ionic Polymer Metal Composites (IPMCs)
Smart Multi-Functional Materials and Artificial Muscles
Volume 2

RSC Smart Materials

Series Editors:

Professor Hans-Jörg Schneider, *Saarland University*, Germany

Professor Mohsen Shahinpoor, *University of Maine*, USA

Titles in this Series:

- 1: Janus Particle Synthesis, Self-Assembly and Applications
- 2: Smart Materials for Drug Delivery: Volume 1
- 3: Smart Materials for Drug Delivery: Volume 2
- 4: Materials Design Inspired by Nature
- 5: Responsive Photonic Nanostructures: Smart Nanoscale Optical Materials
- 6: Magnetorheology: Advances and Applications
- 7: Functional Nanometer-Sized Clusters of Transition Metals: Synthesis, Properties and Applications
- 8: Mechanochromic Fluorescent Materials: Phenomena, Materials and Applications
- 9: Cell Surface Engineering: Fabrication of Functional Nanoshells
- 10: Biointerfaces: Where Material Meets Biology
- 11: Semiconductor Nanowires: From Next-Generation Electronics to Sustainable Energy
- 12: Supramolecular Materials for Opto-Electronics
- 13: Photocured Materials
- 14: Chemoresponsive Materials: Stimulation by Chemical and Biological Signals
- 15: Functional Metallosupramolecular Materials
- 16: Bio-Synthetic Hybrid Materials and Bionanoparticles: A Biological Chemical Approach Towards Material Science
- 17: Ionic Polymer Metal Composites (IPMCs): Smart Multi-Functional Materials and Artificial Muscles, Volume 1
- 18: Ionic Polymer Metal Composites (IPMCs): Smart Multi-Functional Materials and Artificial Muscles, Volume 2

How to obtain future titles on publication:

A standing order plan is available for this series. A standing order will bring delivery of each new volume immediately on publication.

For further information please contact:

Book Sales Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Telephone: +44 (0)1223 420066, Fax: +44 (0)1223 420247

Email: booksales@rsc.org

Visit our website at www.rsc.org/books

Ionic Polymer Metal Composites (IPMCs) Smart Multi-Functional Materials and Artificial Muscles Volume 2

Edited by

Mohsen Shahinpoor

University of Maine, Orono, Maine, USA

Email: shah@maine.edu



RSC Smart Materials No. 18

Print ISBN: 978-1-78262-721-0

PDF eISBN: 978-1-78262-723-4

ISSN: 2046-0066

A catalogue record for this book is available from the British Library

© The Royal Society of Chemistry 2016

All rights reserved

Apart from fair dealing for the purposes of research for non-commercial purposes or for private study, criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulations 2003, this publication may not be reproduced, stored or transmitted, in any form or by any means, without the prior permission in writing of The Royal Society of Chemistry or the copyright owner, or in the case of reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK, or in accordance with the terms of the licences issued by the appropriate Reproduction Rights Organization outside the UK. Enquiries concerning reproduction outside the terms stated here should be sent to The Royal Society of Chemistry at the address printed on this page.

The RSC is not responsible for individual opinions expressed in this work.

The authors have sought to locate owners of all reproduced material not in their own possession and trust that no copyrights have been inadvertently infringed.

Published by The Royal Society of Chemistry,
Thomas Graham House, Science Park, Milton Road,
Cambridge CB4 0WF, UK

Registered Charity Number 207890

For further information see our web site at www.rsc.org

Printed in the United Kingdom by CPI Group (UK) Ltd, Croydon, CR0 4YY, UK