

Gabriele Sadowski • Walter Richtering
Editors

Intelligent Hydrogels

 Springer

Contents

Supramolecular Chromaticity and Thermoresponsive Hydrogels: A Self-Assembly Study on Maleamic Acid-Based Amphiphiles	1
Andreas Bernet, Marina Behr, Rodrigo Q. Albuquerque, Marko Schmidt, Jürgen Senker, and Hans-Werner Schmidt	
Thermo-responsive Amphiphilic Di- and Triblock Copolymers Based on Poly(N-isopropylacrylamide) and Poly(methoxy diethylene glycol acrylate): Aggregation and Hydrogel Formation in Bulk Solution and in Thin Films	15
André Laschewsky, Peter Müller-Buschbaum, and Christine M. Papadakis	
Visualization of Hydrogel Shrinkage Due to Ion Replacement by ^{27}Al and ^{23}Na Magnetic Resonance Imaging	35
M. Raue, J. Martins, M. Küppers, T. Mang, B. Blümich, and S. Stapf	
Sodium NMR Relaxation: A Versatile Non-invasive Tool for the Monitoring of Phase Transitions and the Estimation of Effective Pore Sizes of Supramolecular Hydrogels	45
M. Raue, A. Bernet, M. Küppers, S. Stapf, H.-W. Schmidt, B. Blümich, and T. Mang	
Tracer Mobility in Aqueous Poly(N-isopropylacrylamide) Grafted Networks: Effect of Interactions and Permanent Crosslinks	53
A. Vagias, P. Košován, C. Holm, H.-J. Butt, K. Koynov, and G. Fytas	
Poly-NIPAM Microgels with Different Cross-Linker Densities	63
Matthias Karg, Sylvain Prévost, Astrid Brandt, Dirk Wallacher, Regine von Klitzing, and Thomas Hellweg	
Tailored Macromolecules Versus Nanoparticles as Additives for Mechanical Reinforcement of NCO-sP(EO-<i>stat</i>-PO) Hydrogels	77
Konstantina Harrass, Haika Hildebrandt, Martin Moeller, and Juergen Groll	
Temperature-Sensitive Composite Hydrogels: Coupling Between Gel Matrix and Embedded Nano- and Microgels	91
Judith Meid, Swen Lehmann, and Walter Richtering	
In-situ Generation of Gold, Platinum and Palladium Nanoparticles in N-isopropylacrylamide-surfmer Copolymer Hydrogels and Catalytic Activity of the Gels	101
Katharina Kraus, Tamara Mielke, Tatjana Friedrich, and Bernd Tiede	
Core-Shell Microgels as Nanoreactors	113
Yan Lu, Nicole Welsch, Joachim Dzubiella, and Matthias Ballauff	

Magnetomechanical and Magnetothermal Coupling in Ferrohydrogels	131
E. Roeben, L. Roeder, R. Messing, N. Frickel, G. Marten, T. Gelbrich, and A.M. Schmidt	
Hydrophobically Covered Hydrogels: Preparation Approaches and Possible Applications	149
Marta Horecha, Volodymyr Senkovskyy, Anton Kiriy, and Manfred Stamm	
Influence of Salt and pH on the Swelling Equilibrium of Ionizable N-IPAAm Based Hydrogels: Experimental Results and Modeling	163
Luciana Ninni, Viktor Ermatchkov, Hans Hasse, and Gerd Maurer	
Thermodynamic Modelling of Hydrogel Systems	175
Markus C. Arndt and Gabriele Sadowski	
Modeling and Simulation of Hydrogels for the Application as Bending Actuators	189
T. Wallmersperger, A. Attaran, K. Keller, J. Brummund, M. Guenther, and G. Gerlach	
Molecular Simulations of Hydrogels	205
Peter Košovan, Tobias Richter, and Christian Holm	
Relaxation Mechanisms of Physical Hydrogels Networks	223
Jan Zidek, Andrey Milchev, Josef Jancar, and Thomas A. Vilgis	
Calculating Structural Properties of Reversibly Crosslinked Polymer Systems Using Self-Consistent Field Theory	233
Thomas Gruhn, Daming Li, and Heike Emmerich	
Seawater Desalination via Hydrogels: Practical Realisation and First Coarse Grained Simulations	247
Johannes Höpfner, Tobias Richter, Peter Košovan, Christian Holm, and Manfred Wilhelm	
Swelling Behaviour of Functionalized Hydrogels for Application in Chemical Sensors	265
Margarita Guenther, Thomas Wallmersperger, Karsten Keller, and Gerald Gerlach	
Index	275