



# Microgel Suspensions: Fundamentals and Applications

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## **Microgel Suspensions: Fundamentals and Applications** From Wiley-VCH

Providing a vital link between chemistry and physics on the nanoscale, this book offers concise coverage of the entire topic in five major sections, beginning with synthesis of microgel particles and continuing with their physical properties. The phase behavior and dynamics of resulting microgel suspensions feature in the third section, followed by their mechanical properties. It concludes with detailed accounts of numerous industrial, commercial and medical applications. Edited by David Weitz, Professor at Harvard and one of the world's pre-eminent experts in the field.

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## **Editorial Review**

### Review

“This text is aimed at both students and those at the forefront of research. It works well and many would benefit from reading it.” (*Materials World*, 1 September 2013)

### From the Back Cover

Microgel suspensions consist of colloidal gel particles that are able to swell or de-swell in response to ambient changes, giving rise to flexibility in both shape and volume. The aim is to tailor the resulting suspension structure, dynamics and rheology towards specific applications, ranging from novel sensing and optical effects to the industrial reality of medical and consumer products.

Providing a vital link between chemistry and physics on the mesoscale, this first book dedicated entirely to the topic offers concise coverage in five major sections, beginning with synthesis of microgel particles and continuing with their physical properties. The phase behavior and dynamics of resulting microgel suspensions feature in the third section, followed by their mechanical properties. It concludes with detailed accounts of numerous industrial, commercial and medical applications.

Edited by a world-renowned panel of experts in the field, this volume provides the essential information for physicists, chemists, materials scientists, engineers, and biologists.

### About the Author

Alberto Fernandez-Nieves is Assistant Professor of Physics at the Georgia Institute of Technology. He received his B.S. and Ph.D. in Physics from the University of Granada (Spain) and came to the US to work with David Weitz as a Post-Doctoral Researcher in 2001. Before joining GeorgiaTech, he was Lecturer in the Department of Applied Physics at the University of Almeria (Spain). His research is in Soft Condensed Matter Physics with a focus on the connection between microscopic order and macroscopic properties.

Hans M. Wyss is assistant professor in Mechanical Engineering and the Institute of Complex Molecular Systems at Eindhoven University of Technology in Eindhoven, the Netherlands.

He received his MSc in Physics and his PhD in Materials Science from ETH Zurich (Switzerland). He worked as a postdoctoral researcher in David Weitz's research group at Harvard University, 2003-2008. His research interests are focused on the structure, dynamics, and rheology of soft materials.

Dr. Johan Mattsson is a Lecturer in physics at the University of Leeds, U.K.. He received his MSc in Eng. Physics from Lund University, Sweden, and his PhD in Materials Science from Chalmers University of Technology, Sweden. He did postdoctoral work with Prof. David Weitz at Harvard University and has held a position as Assistant Professor of physics at Chalmers. His research is directed towards the physics of disordered materials and soft matter.

David Weitz is the Mallinckrodt Professor of Physics and of Applied Physics at Harvard University. He received his B.S. in Physics from the University of Waterloo, and A.M. and Ph.D. in Physics from Harvard University. His research group studies the physics of soft condensed matter. Before coming to Harvard, David Weitz was a Professor of Physics at the University of Pennsylvania and a Physicist with Exxon Research and Engineering Co.

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