1. Record Nr. UNINA9910298635403321

Autore	Ebeling Bastian
Titolo	Smart Nanohybrids of RAFT Polymers and Inorganic Particles / / by Bastian Ebeling
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-15245-9
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (311 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530.41
Soggetti	Polymers Ceramics Glass Composite materials Chemistry, Inorganic Amorphous substances Complex fluids Nanochemistry Polymer Sciences Ceramics, Glass, Composites, Natural Materials Inorganic Chemistry Soft and Granular Matter, Complex Fluids and Microfluidics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Originally presented as the author's dissertation (Ph. D.).
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Part I Introductory part: Introduction and theoretical background -- Part II Experimental: Instrumentation -- Substances -- Part III Results: Analysis of microscopic images -- Building-block design -- High-pressure phase behavior of aqueous pNIPAm solutions -- Nanocomposites via polymerization from silica -- Nanohybrids of gold particles -- Future perspectives -- Conclusions -- Part IV Appendices.
Sommario/riassunto	This doctoral thesis explains the synthesis and characterization of novel, smart hybrid nanomaterials. Bastian Ebeling combines in this work synthetic polymers with inorganic nanoparticles from silica or

gold. The first chapters offer a comprehensive introduction to basics of polymer science and the applied methodologies. In following chapters, the author describes in detail how he systematically tailored the polymers using reversible addition-fragmentation chain transfer polymerization (RAFT) for combination with inorganic nanoparticles. This work also unravels mechanistic, thermodynamic, and structural aspects of all building blocks and reaction steps. The method described here is simple to perform and opens up pathways to new sets of nanohybrid materials with potential applications as sensors, in energy conversion, or catalysis. Readers will find a unique picture of the step-by step formation of new complex nanomaterials. It offers polymer scientists a systematic guide to the formation and synthesis of a new class of responsive nanomaterials.