1. Record Nr. UNINA9910785994403321

Titolo	Complex Materials in Physics and Biology [[electronic resource]] : proceedings of the International School of Physics "Enrico Fermi" / / ed. by Francesco Mallamace, H. Eugene Stanley
Pubbl/distr/stampa	Amsterdam, : Ios Press, 2012
ISBN	1-299-33312-5 1-61499-071-9
Descrizione fisica	1 online resource (449 p.)
Collana	Proceedings of the International School of Physics "Enrico Fermi" Complex materials in physics and biology
Altri autori (Persone)	MallamaceF (Franco) StanleyH. Eugene <1941-> (Harry Eugene)
Disciplina	003
Soggetti	System theory Nonlinear systems Statistical physics Scaling laws (Statistical physics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Title Page; Indice; Preface; Gruppo fotografico dei partecipanti al Corso; Models of the hydrophobic attraction; Dynamics of biopolymers and their hydration water studied by neutron scattering; Introduction; Theory of incoherent neutron scattering method for studying dynamics of a protein and its hydration water; Relaxing-Cage Model (RCM) of the single-particle dynamics of water; Coupling of the dynamics of a protein and its hydration water; The elastic scan and the MSD of hydrogen atoms in protein and its hydration water Evidence of the dynamic crossover from the pressure dependence of the measured relaxation time of hydration water in biopolymers by QENSSynchronization of the dynamic crossover phenomena in other biopolymers and their hydration water; An alternative method for detecting the dynamic crossover temperature; Study of intermediate time protein dynamics; Summary; Wetting transitions in fluid interfaces; Basics on wetting transitions; Line tension; Density functional models: general approach; Higher-order wetting transitions; Overview of other

models

Geometrical characterization of dynamical heterogeneities in chemical gels, colloidal gels and colloidal glassesIntroduction; Mode coupling theory and the glass transition; Dynamical heterogeneities; Dynamical susceptibility; Non-Gaussian parameter; Dynamical heterogeneities and mode coupling theory; Dynamical heterogeneities: from chemical gels to structural glasses; Dynamical heterogeneities in chemical gels; Dynamical heterogeneities in colloidal gels; Dynamical heterogeneities in structural glasses; Conclusions; Lectures on molecular- and nano-scale fluctuations in water

Lecture one: tetrahedral condensed matterMolecular structure; Diffusion; Chemistry in water; Density fluctuations; Electric field fluctuations; Water auto-ionization; Lecture two: Solvation; Solvation free energies; Solvation of small excluded volumes; Solvation of ions; Solvation of large solutes; Lecture three: Hydrophobicity and self-assembly; The driving force for hydrophobic assembly; Micelle assembly; Dewetting transitions in hydrophobic assembly; Theory of dewetting; Applications and hydrophobic collapse; Water and anomalous liquids; An overview on anomalous liquids and water Thermodynamic anomaliesDynamic anomalies; Structural anomalies and polymorphism; A few questions; A Hamiltonian model for water; Phase diagram and supercooled water; Water confined between hydrophobic surfaces; Percolating approach; Dynamical crossover; Liquid-liquid phase transitions; Conclusions; Dynamic crossover phenomenon in confined water and its relation to the liquid-liquid critical point: Experiments and MD simulations; The density minimum, peaking of thermal expansion coefficient and equation of state (EOS) of 1-D confined water

Dynamic crossover in the alpha-relaxation times of 1-D and 3-D confined water