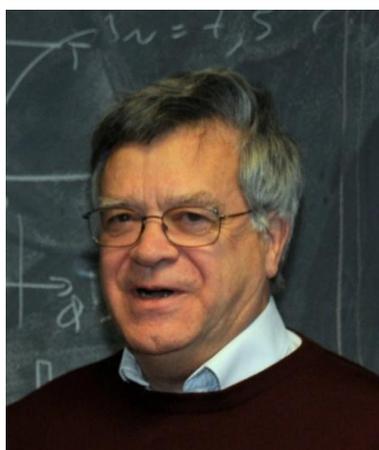




ICQM Weekly Seminar

Aqueous solutions of hydrophilic and hydrophobic amino acids



José Teixeira

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Time: 4:00pm, Sept 5, 2012 (Wednesday)

时间: 2012年9月5日 (周三) 下午4:00

Venue: Room 607, Conference Room A, Science Building 5

地点: 理科五号楼607会议室

Abstract

Water plays an essential role on the activity and chemical reactions involving biomolecules. For long time water was taken like a uniform medium where proteins and other molecules are embedded. Actually, there is a high complexity and a large variety of behaviours, depending strongly on local conditions, partly imposed by specific sites on the biomolecules. Dynamics at the ps time scale is well studied by quasielastic neutron scattering. It will be presented the results of selected experiments of a long study performed with peptides chosen ad hoc because of their specificity, as for example, the presence or absence of a hydrophobic chain.

In these experiments it is possible to decouple local motions (rotation of methyl groups, hydrogen bonds) from the global diffusion of water and that of the peptide. The main conclusions are a reduced translational diffusion as compared to bulk water, as expected for a situation of confinement. The still open problem of “master-slave” between water and proteins and its temperature dependence is discussed. Finally, through the measurement of vibrational density of states, it is shown that the molecular volume of water is smaller in a hydrophilic environment.

About the Speaker

José Teixeira is from Laboratoire Léon Brillouin (CEA/CNRS) CEA Saclay 91191 Gif-sur-Yvette Cedex France, and is the director of research, first class, at Centre National de Recherche Scientifique (CNRS). His main scientific interests are:

Physics of molecular liquids and solutions (structure and dynamics)

Disordered systems, including soft matter (colloids, biomolecules)

Water, supercooled water, confined water, aqueous solutions

Neutron scattering, namely Small Angle and Quasi-elastic scattering

Other scattering techniques (light, X-rays)