

Dottorato di Ricerca in Fisica dell'Università degli Studi di Messina

20 Maggio 2010, ore 15.00, Aula E. Majorana, Dip.to di Fisica,
Ctr. Papardo Sperone, 31, S. Agata, Messina

Prof. José Teixeira

Laboratoire Léon Brillouin- Saclay-France

Titolo del Seminario:

Hydration of aminoacids. From powders to solutions

Abstract

We investigate the dynamics of side chains in proteins, using hydrophobic peptides, from dry and hydrated powders up to solutions. We compare the internal dynamics of a prototypical hydrophobic amino acid, N-acetyl-leucine-methylamide, and alanine amino acids as a function of water/peptide molecular ratio. While previous results have shown that, in concentrated solution, when the hydrophobic side chains are hydrated by a single hydration water layer, the only allowed motions are confined and can be attributed to librational/rotational movements associated with the methyl groups, we observe instead a dynamical evolution from dry to highly hydrated powder. We also observe rotational and diffusive motions and a dynamical transition at about 250 K for long side chain peptides while for peptides with short side chains, there is no dynamical transition but only rotational motions. We emphasize that the side chain length has a role on the onset of dynamical transition.