



复旦大学物理系物质科学报告

Physics Department Colloquium

Molecular Structures of Biological Molecules at Buried Interfaces Determined by Linear and Nonlinear Vibrational Spectroscopic Techniques

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Sum frequency generation (SFG) vibrational spectroscopy has been applied to investigate a variety of biological molecules at buried interfaces, supplemented by attenuated total reflectance – Fourier transform infrared spectroscopy (ATR-FTIR). SFG has been applied to determine conformations and orientations of peptides and proteins associated with model cell membranes. Various peptides including antimicrobial peptides (AMPs) and cell penetrating peptides (CPPs) with various secondary structures were investigated. It was found that various peptides interact with different model cell membranes, e.g., model bacterial cell membranes and model mammalian cell membranes quite differently. The membrane orientations of various AMPs deduced using SFG and ATR-FTIR can be successfully correlated to different antimicrobial modes of action. Membrane orientations of various proteins, such as cytochrome b5, G β γ -GRK2 complex, and G α β γ complex have been successfully determined. SFG and ATR-FTIR have also been used to determine conformations and orientations of various peptides and enzymes immobilized on self-assembled monolayers and polymers. Structures of surface immobilized peptides and enzymes were successfully deduced in different chemical environments, which have been well correlated to their functions and activities.

Time: 2:00 pm, Tuesday, 2013.12.10

Location: Physics Building, Room 221B

(Cookies and coffee are served from 1:30 pm)