THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics

SEMINAR

An Atomic-Scale View into the Weird World of the Bacterial Cell Envelope

by

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ALL INTERESTED ARE WELCOME
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Abstract

The cell envelope in Gram-negative bacteria comprises two distinct membranes with a cell wall between them. There has been a growing interest in understanding how these layers, namely the inner membrane (IM), outer membrane (OM), and peptidoglycan cell wall (PG), are coupled to and interact with one another to carry a number of critical cellular functions, such as mechanically resisting turgor pressure, importing nutrients, and exporting drugs. To begin addressing these uncertainties, we have developed accurate, atomistic models of all the components, which can then be used as input to molecular dynamics (MD) simulations of complexes carrying out various functions in this unique region of the cell. In this talk, I will highlight a few examples of our work on these complexes, such as the multi-drug efflux pump AcrAB-TolC, which exports harmful compounds before they can accumulate, the Lpt system, which traffics lipopolysaccharides to the OM, and the BAM complex, which inserts ß-barrel proteins into the OM.

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