UNIMORE Dipartimento di Scienze Fisiche, Informatiche e Matematiche
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

CNRNANO MODENA S3

FIM-S3 SEMINAR

Protein adsorption on inorganic surfaces: from fundamentals to technology

Wednesday June 9th, 2021 – 16.00

Online streaming using Google Meet
Link: https://meet.google.com/yud-upbp-mno

Speaker

Paul MULHERAN – University of Strathclyde, Glasgow

Abstract

In my group, we have been studying protein adsorption at inorganic surfaces for over a decade, using atomistic molecular dynamics to confront experiment and to use as a design tool for new technologies. Our initial model protein was lysozyme, a globular protein that, due its size and stability, is ideal for both simulation work and for experiments. Experimentally, AFM and QCM have proved powerful tools to explore the development of protein films at surfaces such as mica and silica, while in simulation the adsorption of lysozyme at simplified model surfaces have provided insights into the physics of the protein adsorption. The picture that emerges is readily adapted to many other proteins, allowing simulations to be used as design tools for technologies ranging from sensors and diagnostics to therapeutics. Application to the development of vaccines will be discussed, leading to a forward look of what we might hope to achieve in response to the recent pandemic.

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