中央大學物理學系

Department of Physics, National Central University

Colloquium

Exploring Molecular Dynamics in Perovskites, Metal-Organic Frameworks (MOFs), and Amyloidogenic Proteins

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Venue: S4-625

Time: 14:00-16:00

Abstract : This talk will delve into two research projects focused on understanding the dynamics and properties of materials and proteins. First, we will investigate the use of solid-state NMR (ssNMR) spectroscopy to study the reorientational dynamics of A-site cations in 2D organic-inorganic hybrid perovskites (OIHPs), as well as the water transport dynamics in the Metal-Organic Framework UTSA-280. Both materials are of significant interest for their applications in photovoltaics and chemical separations, respectively. In the 2D OIHP project, our research sheds light on how the organic spacers influence the dynamics of A-site cations, providing key insights into their physical properties. For the MOF project, we uncover the mechanism behind the fast water transport in UTSA-280. In the second part of the talk, we will shift our focus to the rare disease transthyretin familial amyloid polyneuropathy (TTR-FAP). Over 90% of Taiwanese TTR-FAP patients carry the A97S mutation in transthyretin (TTR). We have studied the structural and dynamic properties of the protein to uncover the molecular basis of its pathogenicity.