

高分子学会九州支部 外国人講演会

Physics and Applications of Polymer Films

Professor Dillip Kumar Satapathy

Soft Materials Laboratory,

Department of Physics, Indian Institute of Technology Madras, India

日時 : 2023 年 5 月 29 日 (月) 15 : 00~16:00

場所 : 九州大学伊都キャンパス 総合学習プラザ AMS1 講義室

Abstract:

The conformation of polymer chains is known to be strongly affected in the proximity of an impenetrable solid surface. Depending on the nature of polymer/surface interactions, a bound layer of polymer chains adsorbed to the surface forms. A growing amount of experimental evidence correlates the physical properties of polymer films (chains confined at the nanoscale level) to the degree of adsorption of monomers onto the supporting substrate. The significantly longer segmental relaxation times of polymer chains in the bound layer dictate the thermal glass transition, maximum water uptake, viscosity, and crystallization kinetics of polymer films. Understanding the properties of irreversible adsorbed bound layers in polymer films is crucial but difficult to access experimentally. In this talk, I will present a novel method to quantitatively determine the thickness and density of the bound layer from the swelling kinetics of polymer films upon exposure to solvent vapor. Novel phenomena such as the occurrence of two glass-like thermal transitions, densification, and anomalous water sorption/desorption kinetics in nanoscale polymer films will be briefly discussed. Moreover, I will talk about some recent work from our lab using polymer films as sensors, actuators, and energy generators.

申込先

1) 参加費 : 無料、2) 定員 : 100 名、3) 申込方法 : 氏名、所属、連絡先を明記の上、E-mail にてお申込みください。4) 申込締切 : 2023 年 5 月 26 日 (金)

E-mail: a-shundo@cstf.kyushu-u.ac.jp (高分子学会九州支部 庶務幹事 春藤淳臣宛)

問合せ先

田中敬二 (九州大学 大学院工学研究院 応用化学部門)