ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΡΟΣ

1) **Ολα τα μέλη ΔΕΠ του Τμήματος Επιστήμης και Τεχνολογίας Υλικών**
2) **Τους εκπροσώπους των Μεταπτυχιακών φοιτητών του Τ.Ε.ΤΥ**

3) **Την Επταμελή Εξεταστική Επιτροπή**
4) **Ολα τα μέλη της Πανεπιστημιακής Κοινότητας**

Πρόσκληση σε Δημόσια Παρουσίαση της Διδακτορικής Διατριβής της

Κας Βασιλικής Μιχαηλίδου

(Σύμφωνα με το άρθρο 12 του Ν. 2083/92)

Την Παρασκευή 31 Οκτωβρίου και ώρα 12:00 το μεσημέρι στην αίθουσα Σεμιναρίων 3 ορόφου-Φυσικό

θα γίνει η δημόσια παρουσίαση και υποστήριξη της Διδακτορικής Διατριβής της υποψήφιας διδάκτορος του Τμήματος Επιστήμης και Τεχνολογίας Υλικών κας Βασιλικής Μιχαηλίδου με θέμα:

«Dynamics of Polymers, Colloids and Mixtures

close to Hard Wall»

Abstract

The aim of this work is to study the interfacial dynamics of different soft matter systems such as polymer brushes, colloidal particles and mixtures. The main technique employed is the Evanescent Wave Dynamic Light Scattering (EWDLS), used to probe dynamics near a surface.

A complete study on the collective dynamics of end-grafted polystyrene brushes in pure solvents, including good solvents, where we will identify the theoretically predicted cooperative diffusion, and a theta solvent, where we have a two-step decay

function using EWDLS will be presented. Synthesis of a wide range of polymer brushes also as carried out using the “grafting from” technique.

Extending these studies on a polymer brush/particle system, we will show how particle penetration in the brush can be measured and offer an estimate of the brush height and how different degree of penetration affects the measured surface diffusivities.

In addition, further investigation of the diffusivities of colloidal particles within swollen brushes will be presented as well as the effect of the brushes grafting density on both particle penetration and diffusivity. The diffusivities themselves of the colloidal particles will also be an issue of investigation.

Finally, we use EWDLS to investigate the Brownian motion of colloids near a solid, planar surface. In the dilute regime, the diffusion coefficient near the interface was found to be much smaller than that for free diffusion in bulk solution.

The same system was used to study the anisotropic diffusion of colloidal suspensions, varying the volume fraction of the colloidal suspensions, from the dilute to a concentrated regime. The near wall dynamics were compared to the associated bulk dynamics of the hard spheres and the main finding was that the parallel diffusivities in the concentrated suspensions behave similarly to the bulk dynamics in contrast with the perpendicular ones that are affected stronger by the presence of the wall.

Ο Πρόεδρος του Τμήματος

Επιστήμης και Τεχνολογίας Υλικών

Νικόλαος Πελεκάνος