ΠΡΟΣ
1) Όλα τα μέλη ΔΕΠ του Τμήματος Επιστήμης και Τεχνολογίας Υλικών
2) Τους εκπροσώπους των Μεταπτυχιακών φοιτητών του Τ.Ε.Τ.Υ.
3) Την Επταμελή Εξεταστική Επιτροπή
4) Όλα τα μέλη της Πανεπιστημιακής Κοινότητας

Πρόσκληση σε Δημόσια Παρουσίαση της Διδακτορικής Διατριβής του κ. Moghimi Esmaeel

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

Την Τετάρτη 30 Νοεμβρίου 2016 και ώρα 10:00

στην αίθουσα Α2 στο κτίριο του Τμήματος Επιστήμης των Υπολογιστών

θα γίνει η δημόσια παρουσίαση και υποστήριξη της Διδακτορικής Διατριβής του υποψήφιου διδάκτορα του Τμήματος Επιστήμης και Τεχνολογίας Υλικών

κ. Moghimi Esmaeel με θέμα:

«Αργή Δυναμική και Γήρανση Κολλοειδών Υάλων και Πηκτωμάτων»

«Microscopic Dynamics and Rheology of Colloidal Gels»

ABSTRACT

In this dissertation we examine both linear and non-linear response rheology of concentrated colloidal suspensions with attractive interactions by using a combination of experiments and Brownian Dynamics (BD) simulations with the view towards understanding the link between microstructure and mechanical properties. The experimental model system is depletion colloid-polymer mixture comprising of a hard sphere (PMMA particles) colloidal suspension with the addition of non-adsorbing linear polymer chains as depletant. We study a range of particle volume factions and attraction strengths exploring from a low particle volume fraction gel to highly dens attractive glassy state. We also perform Brownian Dynamics (BD) simulations in order to get both rheological and detailed structural information. We have studied four topics in this work: We first examine yielding of attractive glasses during start up shear flow. For a fixed volume fraction of φ= 0.62, a wide range of attraction strength and the range of attraction is investigated. We second, examine both linear and nonlinear response rheology of colloidal gels. A range of volume fraction, gel age, and bond strength are investigated. In the third part, we study by rheology and Brownian dynamics (BD) simulations the decay of stress over time after shear cessation of a well-developed steady shear flow in an intermediate volume fraction particle gel (φ=0.44). In the last part, we interrogate both structural and mechanical properties of the gel during flow and its time evolution after shear cessation for both steady and oscillatory shear flow by a

combination of experiments and BD simulations providing a link between structural and mechanical properties of the gel.