ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΔΙΠΛΩΜΑΤΟΣ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ
Τίτλος

«An experimental investigation of phase transitions in polymer and associating polymer solutions»

«Πειραματική μελέτη μεταβάσεων φάσης σε πολυμερικά και συσσωματούμενα διαλύματα»

του Αντρί Μουντιάνου μεταπτυχιακού φοιτητή του

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Η παρουσίαση θα διεξαχθεί με τηλεδιάσκεψη στον παραπάνω σύνδεσμο, σύμφωνα με α) την παρ. 1 του άρθρ.12 της από 11.3.2020 Πράξης Νομοθετικού Περιεχομένου (Α'55), και τις οδηγίες εφαρμογής Α Δ1α/Γποικ.28237/5.5.2020 Κ.Υ.Α (Β'1699), ΑΔΑ: ΨΠ7046ΜΤΛΗ-43Φ.

Περίληψη / Subtract:

We present a systematic investigation of the phase behavior of telechelic star polymers (TSPs), consisting of star block copolymers in a solvent selective for the inner block. By altering the temperature, it is possible to tune the properties (and phase) of the TSPs. We have utilized a series of well-characterized styrene(out)-b-butadiene(in), PS-b-PB, TSPs in phenyldodecane with cloud points of $53.5^{o}C$ and $22^{o}C$ for PS and PB, respectively. We have built a simple and robust turbidity setup and tested by constructing a phase diagram for PS homopolymer and comparing against literature, with support from Flory-Huggins modeling. Results on bimodal have been complemented by linear viscoelastic measurements which are sensitive to the phase changes due to the enhanced fluctuations in their neighborhood. The impact of the molecular weight, the fraction of each block (hence, degree of attraction) and the number of arms on the detected phase behavior (associated with the bimodal line) and dynamics has been identified . These findings serve as guidelines for selecting appropriate TSPs for given applications and for eventually developing designing rules for such systems and their phase behavior with the help of simulations.