ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΗΣ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

Τίτλος

«Ρεολογικές μελέτες γραμμικών και μη-γραμμικών πολυμερικών τηγμάτων σε εύρος μοριακών μαζών»

«Rheological studies of linear and nonlinear polymer melts across a range of molar masses»

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Επιβλέπων Καθηγητής: Δημήτριος Βλασσόπουλος

Τετάρτη 06/07/2022

16:00

Η παρουσίαση θα πραγματοποιηθεί στην **αίθουσα Α210 του Τμήματος Μαθηματικών και Εφαρμοσμένων Μαθηματικών** του Πανεπιστημίου Κρήτης.

ABSTRACT

Understanding the properties of soft matter is the key for designing new materials that embrace a vast variety of applications. It is important to address fundamental questions regarding complex material response. In this work, a systematic rheological study on amorphous, well-characterized synthetic polymers is presented.

Polymeric properties strongly depend on the macromolecular architecture as well as on the molar mass. Linear chains represent the most extensively studied system, however, some aspects of their dynamics remain unresolved. Similarly, the dynamics of branched macromolecules are not fully understood, in particular as a function of grafting density and branch length. A common feature of linear and branched polymers, affecting their conformational entropy, is the presence of chain ends. Cyclic polymers on the other hand, are unique due to the lack of free ends. Yet, their rheology is not fully explored. In addition, for all architectures, the majority of experimental investigations focused on large molar masses and long chains, rendering the study of the transition to short chains necessary.

In this work we investigate experimentally the linear and nonlinear shear rheology of various polymeric architectures, mainly in the unentangled regime and the transition to entangled one. A comparison between the obtained and literature data is also included. The experimental difficulties that arise during the investigation of such samples are discussed in detail. This work aims to identify the dynamic signatures of those architectures, which serve as ingredients to describe and predict their rheology and eventually fill the gaps in the characterization map of polymers.