



EIXHMYΘ-ITE

ΣΕΜΙΝΑΡΙΟ

- ΟΜΙΛΗΤΗΣ:** Καθηγητής Αντώνης Μπερής
Department of Chemical Engineering
University of Delaware
- ΘΕΜΑ:** Modern Non-Equilibrium Thermodynamics Formulations with
Applications in Polymer Rheology
- ΤΟΠΟΣ:** Αίθουσα Σεμιναρίων EIXHMYΘ - ITE
- ΗΜΕΡΟΜΗΝΙΑ:** 2 Αυγούστου 2000
- ΩΡΑ:** 19:00

ΠΕΡΙΛΗΨΗ

In the last decade significant progress has taken place within non-equilibrium thermodynamics resulting in several formulations for coupled transport phenomena that allowed for an extension and a more systematic application of continuum mechanics to continua endowed with an internal microstructure. Recently, the consistency between two of those approaches (one and two-generator formulations) has been extensively confirmed for a wide range of polymer models.

In this presentation we develop gradually the general approach by emphasizing the close connection that exists between one of the new formalisms, that involving a generalized bracket, and the more traditional approach of modeling dissipative phenomena through Linear Irreversible Thermodynamics (LIT).

The new approach is shown to involve a merging of LIT (and its nonlinear generalizations) with the most general Poisson-bracket description of conservative dynamics. Then, we overview illustrative examples of the implementation of the bracket non-equilibrium thermodynamic description to the study of polymer systems under flow. New phenomena are observed due to the coupling between various transport and relaxation processes with important consequences as far as the understanding of the nonlinear dynamics and the rheology of polymer systems.