



DEPARTAMENTO  
DE ANÁLISIS  
MATEMÁTICO-  
MATEMÁTICA  
APLICADA



## Mini curso de doctorado

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# Mathematics and Modelling for Nematic Liquid Crystals for New Applications

In the first lecture we give a brief introduction to the mathematics, modelling and applications of nematic liquid crystals. We introduce the simplest continuum theory for nematic liquid crystals - the Oseen Frank theory. As a case study, we use the Oseen Frank theory to model a simple square device filled with nematic liquid crystals, to compute the stable states and their relative energies.

The second lecture builds on the first one. We give a brief introduction to the Landau-de Gennes theory for nematic liquid crystals, which is more comprehensive than the Oseen-Frank theory discussed in Lecture 1. We then use the Landau-de Gennes theory to model the square device introduced in Lecture 1, to capture new solution branches and biaxiality, which are outside the scope of the Oseen-Frank approach.

Organizado por el grupo UCM MOMAT, con la colaboración del IMI y del Departamento de Análisis Matemático-Matemática Aplicada

**Fecha: Viernes 15 de diciembre de 2017**

**Hora: 10-11 y 11-12 horas**

**Lugar: Aula 209 (Seminario Alberto Dou)**

**Facultad de CC Matemáticas, UCM**