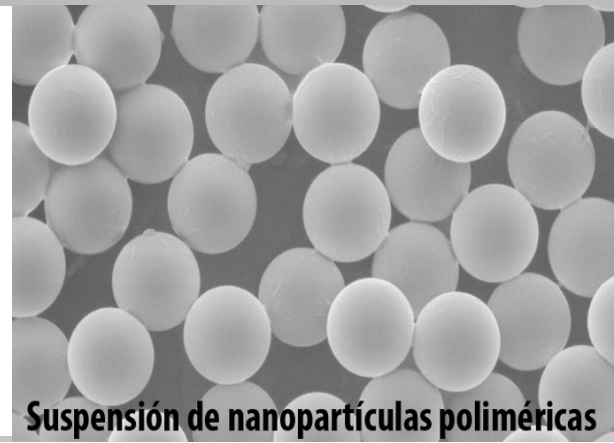




## STATISTICAL PHYSICS AND PHYSICS OF DISPERSED MEDIA



Suspensión de nanopartículas poliméricas

### INTRODUCTION

The main focus of the group is the development of theoretical studies and numerical methods and simulations to study the collective behavior of systems of nanoparticles. In particular, they study the behaviour of nanoparticle suspensions in aqueous media. These systems have an interest in biotechnology and biomedical applications. They also study the ordering of assemblies of magnetic nanoparticles, exploring the physical limits for the storage of information on magnetic media. Moreover, it maintains an intense and constant collaboration in external projects of other research groups, which belong to other Universities, OPIs (such as the CSIC) and R & D & I services of many technological companies. Many of these collaborations are based on the expert use of multiphysics simulation and numerical methods provided by the research group, and are framed in very diverse areas of Science and Engineering.

### RESEARCH TOPICS

- Electrokinetics and rheological behaviour of nanoparticle Systems.
- Phase transitions in systems of magnetic nanoparticles.
- Rational design of hydrogels and stimuli-responsive nanoreactors.
- Encapsulation and delivery of drugs in hydrogels.
- Numerical simulations in science and Engineering.

### SCIENTIFIC-TECHNICAL SERVICES

- Computer models of physical systems.
- Multiphysics numerical simulations of heat transfer phenomena, fluid dynamics, structural mechanics, electromagnetism, and chemical engineering.

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