MAGNETOHYDRODYNAMICS Vol. 47 (2011), No. 2, pp. 121–121

PREFACE

This special issue of Magnetohydrodynamics contains a series of contributions, which had been presented during the Euromech Colloquium 526 "Patterns in Soft Magnetic Matter" held in Dresden, Germany, March 21–23, 2011. Following the long-standing tradition of Euromech Colloquiums, the one in Dresden in 2011, specialized in the most recent development and research in pattern formation in soft magnetic matter, gathered about 40 scientists from ten European countries in the informal atmosphere of time-flexible oral and fruitful poster sessions for three days.

The objective of this issue is to provide an overview of the subjects discussed during the meeting, ranging from the surface instabilities and patterns of magnetic fluids, instabilities of elastic magnetic matter, flow instabilities of magnetorheological fluids to microstructural properties of magnetic gels and emulsions. In the present issue, we try to represent the variety of scientific tools employed in the investigations of magnetic soft matter. On the one hand, one can find here experimental advances in convection, pattern formation, magnetic particle analysis and magneto-elastic materials. On the other hand, versatile theoretical approaches based on continuous media mechanics, magnetohydrodynamics and dealing with separate magnetic particles are used in the contributions collected here to describe the connection between the microstructure and macroscopic properties of magnetic soft matter. Thirdly, the issue contains recent developments of computer simulation techniques aimed at understanding the main interactions and the influence of geometrical constraints on the properties of magnetic fluids and gels. Thus, being relatively short, the present issue clearly reflects the diversity of subjects, approaches and perspectives in the fascinating field of magnetic soft matter.

Euromech Colloquium 2011
Organizing Committee