

PREFACE

## Physics of protein motility and motor proteins

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## PREFACE

# Physics of protein motility and motor proteins

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Motor proteins are enzymatic molecules that transform chemical energy into mechanical motion and work. They are critically important for supporting various cellular activities and functions. In the last 15 years significant progress in understanding the functioning of motor proteins has been achieved due to revolutionary breakthroughs in single-molecule experimental techniques and strong advances in theoretical modelling. However, microscopic mechanisms of protein motility are still not well explained, and the collective efforts of many scientists are needed in order to solve these complex problems.

In this special section the reader will find the latest advances on the difficult road to mapping motor proteins dynamics in various systems. Recent experimental developments have allowed researchers to monitor and to influence the activity of single motor proteins with a high spatial and temporal resolution. It has stimulated significant theoretical efforts to understand the non-equilibrium nature of protein motility phenomena. The latest results from all these advances are presented and discussed in this special section.

We would like to thank the scientists from all over the world who have reported their latest research results for this special section. We are also grateful to the staff and editors of *Journal of Physics: Condensed Matter* for their invaluable help in handling all the administrative and refereeing activities. The field of motor proteins and protein motility is fast moving, and we hope that this collection of articles will be a useful source of information in this highly interdisciplinary area.