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Preface for the 37<sup>th</sup> Risø Symposium Proceedings, IOP publication

## PREFACE

### **Proceedings of the 37<sup>th</sup> Risø International Symposium on Materials Science: *Understanding performance of composite materials – mechanisms controlling properties***

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The theme of the 37<sup>th</sup> Risø International Symposium is the scientific basis for understanding the performance of composite materials. Specifically, the Symposium focuses on the underlying mechanisms that control the properties of composites, which will lead to better and more reliable model predictions. This will serve to support and further promote the technological development of composite solutions.

The present state of composite development was founded by the first scientific studies on composites in the 1960s, establishing fundamental models for fibre reinforcement in composites. Technological challenges have required continued development of more advanced materials models and experimental techniques to study the underlying mechanisms and phenomena for specific composite properties and performance, both the interactions between fibres and matrix, and the more complex loading modes such as fatigue and fracture behaviour. Further work has addressed the development of new fibre and matrix materials, improved composite manufacturing techniques, and recently, recycling routes for composites.

The present Symposium Proceedings cover fundamental studies on the properties and performance of a range of fibre composite systems, such as polymer matrix composites, biocomposites, nanocomposites, and hybrid composites. Examples of matters addressed are stress-strain behaviour of fibres, cure kinetics and residual stresses in matrices, chemistry and mechanical evaluation of fibre/matrix interfaces, microstructure and micromechanics of composites, damage evolution and ductility in composites, effects of composite manufacturing, and recycling opportunities. The Proceedings contain 10 invited papers, and 40 contributed papers.

The 37<sup>th</sup> Risø International Symposium is organised by the Section of Composites and Materials Mechanics, Department of Wind Energy, Technical University of Denmark (DTU), at the Risø Campus. We would like to thank all those at DTU Wind Energy who assisted in the preparation of the Symposium. We appreciate additionally the support from the international advisory committee consisting of: E. Greenhalgh, UK; F. Paris, Spain; T. Peijs, UK; K. Pickering, New Zealand; K. Schulte, Germany; R. Talreja, USA; J. Thomason, UK; J. Varna, Sweden. We gratefully acknowledge financial support from the following foundations: Civilingeniør Frederik Leth Christiansens Almennyttige Fond, Knud Højgaards Fond, Otto Mønstedts Fond, Danish Center for Applied Mathematics and Mechanics (DCAMM).

