

Book review

POLYMER NANOCOMPOSITES

Y.-W. Mai and Z.-Z. Yu (eds). Woodhead Publishing (UK)/CRC Press (USA), 2006. ISBN 1-85573-969-0 (Woodhead)/0-8493-9297-7 (CRC), £160.00/US\$290.00/€230.00, 608 pp.

This is a substantial and well-presented book aimed at becoming a standard reference on these materials for research and development managers. It succeeds in covering a wide range of nanocomposite materials, and is divided into two parts. Part I covers the synthesis and properties of the varied layered silicate-based nanocomposites, while Part II broadens the range of materials to include novel materials based on carbon nanotubes, nanoparticles, organic-inorganic hybrids and graphite-based nanocomposites.

Part I covers a good variety of layered silicates and their properties in considerable depth. This section should be useful for those with a keen interest in this family of nanocomposites. For the less experienced reader a glossary might have been useful for some of the geological abbreviations that are used. The chapters sit well together, and allow comparison between the different materials covered. It was particularly interesting to see chapters covering traditional composite matrices such as polypropylene, polystyrene, nylon, epoxies and acrylates alongside one dealing with novel biodegradable polymer matrices.

Part II also covers an impressive range of materials, including nanocomposites containing a variety of carbon-based nanomaterials, and interesting hybrid materials, such as the magnetic polymer nanocomposites discussed in Chapter 17. A further chapter devoted to the preparation and properties of

wear-resisting nanocomposites provided an interesting finale to this part of the book.

A feature of the book is the gathering together of both synthetic methodologies, although these were not apparently very varied, and the characterisation techniques applicable to the field. It will be particularly useful to other researchers in the field to have this volume to allow the comparison and development of these techniques for characterisation of future generations of nanocomposite materials.

Overall, the chapters in both parts of the book were well written and edited. It seemed, however, that while some chapters provided a wide-ranging and comprehensive review of the relevant subject, others were apparently research papers that had been reproduced and largely highlighted the work of a single group. The former seemed to be more appropriate to this book in the context of its stated aim to be a standard reference on polymer nanocomposites.

This book is therefore to be recommended as a useful reference for materials scientists, especially those with a background in nanocomposites and silicates. An improvement might take into account the multidisciplinary nature of the field to a greater extent, by providing a glossary and/or appendices to elaborate on some of the more esoteric topics and areas of research. This would potentially make the book more accessible to the full range of scientists working in the field of novel materials and nanotechnology.

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