

Book review

Encyclopedia of Polymer Science and Technology, 4th Edition

Herman F. Mark. Wiley, Chichester, UK, 2014, ISBN 978-1-118-63389-2, £2997-00, 12 344 pp.

Wiley's 15-volume set remains the best comprehensive resource for polymer science and technology. Since the first edition was published 50 years ago, the encyclopedia has grown, modernised and updated its content dramatically. Now coming in at over 12 000 pages and 400 articles, the series serves as a powerful resource for polymer novices and experts alike. Most importantly, the work is comprehensive, up-to-date, authoritative and well written. It has quickly become my most borrowed resource – I fear library cards may soon be in order to keep track of the volumes.

Beyond a general tool for the polymer audience, with chapters ranging from 'Acetal Resins' to 'Zwitterionic Polymerization', there is much of interest specifically for the *Green Materials* community. This includes chapters on 'Biodegradable Plastics', 'Biodegradable Polymers: Medical Applications', 'Bioinspired Polymers', 'Cellulose' (and their inorganic and organic esters, ethers and regenerated fibres), 'Chitin and Chitosan', 'Cotton', 'Degradable Polymers and Plastics in Landfill Sites', 'Lignin', 'Polymer-Supported Reagents', 'Recycling Plastics', 'Poly(3-hydroxyalkanoates)', 'Poly(lactic acid)', 'Polymer–Clay Nanocomposites', 'Polymerizations in Ionic Liquids', 'Starch' and 'Xanthan'. Relevant sections in individual chapters on specific topics of more general interest supplement these dedicated chapters. I enjoyed the ability to read outside my expertise, with odd chapters such as 'Furniture' complementing specific tutorial reviews such as 'Polymers of Intrinsic Microporosity' and 'Self-Healing Polymers' catching my eyes. The polymer scientist new to the field will also benefit with the fundamental chapters on polymer characterisation,

nomenclature and much more supplementing the field-specific chapters.

I do believe that the index, which is so important to the utility of an encyclopedia set such as this one, could be improved. While the major themes are hit on, including an excellent poly(whatever-your-heart-desires) section, some minor elements and themes are missed out from coverage, in particular on the green/sustainability side. I would also like to see a unified table of contents at the beginning of volume 1 (rather than hidden in the middle of volume 15) to point the reader in the right direction quickly and to allow easier browsing. In these instances, the online version of the encyclopedia may be a better resource. Finally, as in any epic endeavour like this compilation, there is a certain age to the specific articles by the time they make it to print. This is, of course, a necessity of the publishing process. The chapters themselves should be treated as primers on the field, not definitive comprehensive reviews. These are, of course, but minor quibbles for an excellent and nearly essential addition to the library of practising polymer chemists, physicists and engineers in academia and industry.

There is a certain cachet to the 15-volume set on one's bookshelves, however, and I have found myself browsing articles, and reading from an actual book as a novel and almost nostalgic activity. I highly recommend and endorse the physical copy of the *Encyclopedia of Polymer Science and Technology* to the *Green Materials* community.

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