Book review

Eco-efficient concrete

Edited by F. Pacheco-Torgal, S. Jalali, J. Labrincha and V. M. John.
Woodhead Publishing, Cambridge, UK, ISBN 978-0-85709-4247, £180.00,
595 pp.

Concrete's sustainability and environmental impact have been catalogued before but this book adds new technologies and strategies aimed at providing and maintaining ecologically acceptable concrete and its derivatives. The authorship of the chapters is global and varied, which seems appropriate given that the subject matter of the book is also global.

The book is split into four parts, with each part covering a specific topic. The four parts sum to 21 chapters, covering, for example, Portland cement concretes, supplementary materials such as pulverised-fuel ash, ground granulated blast-furnace slag, waste, alternative binders, magnesia, nano additions and bacterial modifiers. Each chapter has its own substantial reference list. The content is wide ranging, detailed, diverse and practical. The text is supplemented by figures, drawings and tables of information.

The book not only catalogues the present, but projects into the future. Alternative fuels, carbon capture, reduced binder content, assessment strategies, cement replacements, artificial pozzolans, recycled glass and incinerator and polymeric wastes are dealt with thoroughly and in a forward-looking manner.

The chapter on polymers in concrete is novel and includes admixtures, the use of which is predicted to increase, particularly for ready-mixed concretes. Polymer-modified (latex) and impregnated concretes are covered together with polymer concrete itself. Coatings and adhesives are

also included; while this inclusion may seem a little incongruous, for concrete to be eco-efficient it has to be durable and low maintenance, and polymers aim at achieving such performance.

The final part of *Eco-efficient concrete* looks to the future, covering alkali activation and its various mechanisms, durability and sulfoaluminate cements together with those based on magnesia. The latter show promise but are some way from large-scale application. The reliable availability of these alternatives and their components is questionable on a scale that compares with Portland cement.

The last two chapters deal with nano-technology and biotech concrete. These are intriguing topics but research is in its infancy and costs against benefits are increasingly relevant. Bio mineralisation to increase the durability of concrete is fascinating but, again, its exploitation depends on more research.

This indexed book will appeal not only to concrete product developers, researchers and teachers of concrete technology, but also to those with a materials curiosity about concrete.

Concrete is global. It is the premier construction material on an industrial scale and is here to stay. Its efficient manufacture and use are fundamental to the future of construction. That is important to all of us.

Peter Hewlett