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Book reviews

Cement and concrete

M. S. J. Gani

Chapman and Hall, London, 1997. 212 pp. ISBN 0 41 279050 5. £24.95

The materials engineering student tackling cement and concrete has always been faced with choosing between books written for civil and building engineers, in which concrete technology, mix design, quality control and engineering are emphasized, and books written by and for chemists, in which hydration, microstructure, crystallography and the like are discussed in detail. Occasionally a book such as that by Ashby and Jones, *Engineering Materials 2*, appears in which cement and concrete are mentioned as a case study (only about 10 pages in that book), but generally the shelf for materials engineers is very bare. Gani's book aptly fills this gap with an emphasis on materials science combined with sufficient attention paid to the context of the use of the materials to give the presentation relevance.

This excellent and concise introduction to the behaviour of cement and concrete has been developed from a course on cement and concrete for materials engineering degree students given by the author at Monash University, Australia. This provenance is occasionally evident when references to local conditions or standards are made, but these are insufficiently frequent to spoil the universal appeal of the book. The subject matter is divided along traditional lines with chapters on the historical background, the production of Portland cement, the hydration reactions, mortars, concretes and test methods for their properties. These are followed by discussion of the role of admixtures, leading into high-performance concrete. The physical behaviour of concrete, reinforcement, prestressing and fibre reinforcement are discussed. Deterioration, durability and fire behaviour are dealt with, and the book finishes with a chapter on special cements.

The subject matter is up to date, and each chapter is supported by typically 10–20 references to recent literature. The references themselves have been carefully chosen to be accessible to students as they are not to the primary scientific research literature but mainly to informative review chapters in books or technical articles in magazines. The reader's progress through the text is assisted by some good self-assessment questions which force him or her to scrutinize the text first for the relevant clues and then think hard about the answer.

The book is well presented and packs a lot of information into its 212 pages. It has many apt illustrations to support the text and is commendably free from typographical and other errors. The only error I found was where the same reference to work on coloured concrete appeared twice in the same list on p. 202.

Overall it is an excellent book for its intended student audience, but it should also find a place as a first point of reference on the desk of anyone working with cement and concrete whether they be research student, development engineer, technical consultant or materials engineer working in industry. I wish it had been available when I started as a research student.

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