

Acid-Base Cements

Their Biomedical and Industrial Applications

Acid-base cements have been known since the mid-nineteenth century and offer an alternative to polymerization as a route for forming solid substances. They are quick setting materials and some have unusual properties for cements, such as adhesion and translucency. They find diverse applications ranging from the biomedical to the industrial. Despite this there has been a failure to recognize them as constituting a single, well defined class of material. This book attempts to remedy this situation by unifying the subject and treating this range of materials as a single class. Following a brief historical overview, an introductory chapter defines these cements as materials that are formed by reacting a basic powder with an acidic liquid to yield a salt-like matrix. The nature of the cementation process and the cement-forming acids and bases are discussed. Other chapters are devoted to the methods of study, the structure of water and simple polyelectrolyte theory. In the remaining chapters the various types of cements classified according to the anionic constituent of the matrix, are described. Thus, there are chapters on polyalkenoate, phosphate, oxychloride, oxysulphate and the non-aqueous phenolate cements. A chapter is devoted to miscellaneous aqueous cements which include the recently discovered polyphosphonate cements.

This book is the first comprehensive account of acid-base reaction cements.

Chemistry of Solid State Materials 3

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105,90 €

105,90 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780521675499

Medium: Buch

ISBN: 978-0-521-67549-9

Verlag: Cambridge University Press

Erscheinungstermin: 13.05.2005

Sprache(n): Englisch

Auflage: Erscheinungsjahr 2005

Serie: Chemistry of Solid State
Materials

Produktform: Kartoniert

Gewicht: 679 g

Seiten: 418

Format (B x H): 152 x 229 mm

