Electrocomponent Science and Technology
1975, Vol. 2 p. 221

Book Review

TANTALUM THIN FILMS. (Academic Press Ltd., London).
W.D. Westwood, N. Waterhouse and P.S. Wilcox. (£15).

If there is one company which has pioneered the development of tantalum thin film based devices, it is the Bell Telephone Laboratories, coupled with the manufacturing facilities of the Western Electric Company. The work was initiated by McLean in 1959 and earlier, and subsequently numerous papers and books appeared, dealing either directly or indirectly with tantalum thin film technology, both from Bell and more recently from other companies. It is therefore very appropriate that three authors from the associated company of Bell Northern Research, should now publish a review book of the present position on tantalum thin films. Work has now reached a stage where such a book is of great value. As is always the case, publishing delays inevitably reduce the immediacy of some of the material, but the authors and publishers are to be congratulated in that references are available in the text to work published up to and including 1973. The book is divided into seven chapter headings. The first chapter deals with evaporated films, including both their method of preparation and electrical and structural properties. The second chapter deals with the more widely used method of producing tantalum films, namely, sputtering, and as well as covering sputtering systems that can be used the electrical, mechanical and structural properties of these films are examined. Chapter 3 examines tantalum films sputtered in a doping environment, either in reactive terms or as mixtures. Electrical conduction mechanisms are examined in Chapter 4 and ageing and stability in Chapter 5. Dielectric films are given a chapter to themselves (Chapter 6) and the authors point out that their concern in this book is with dielectric films prepared on thin films of tantalum. They do not therefore subsequently deal with tantalum films prepared on bulk materials, be they foils or sintered powders. This is a pity, as although the authors review properties such as breakdown, d.c. conduction, a.c. conduction etc., such a wide use is made these days of tantalum oxide films prepared by anodising bulk materials, that specific exclusion of this area reduces a little from the value of the book. The last chapter deals with device processing and applications.

The book is well produced, the diagrams are clear and both the author and subject indices provided are good. All in all therefore, the book is a very useful reference work for component scientists and technologists.

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