

Vacuum Science and Technology

Authors: Bert Suurmeijer, Theo Mulder, Jan Verhoeven; hardcover, 19 x 24 cm, 728 pages, ISBN 978-90-9029137-6, NEVAC member price € 129,50.

Writing any text book must be a huge undertaking, but one on the subject of Vacuum Science and Technology has unique challenges. These include the enormous breadth of Vacuum; its dynamic range and associated principles within this, a continually evolving range of applications and their impact on the requirements for future generations of vacuum equipment and systems.

The authors have produced an important contemporary book on the subject of vacuum which will be a valuable addition to the resources of students, educators, theorists and practitioners alike.

The concepts and materials are accessible to all from those with high school diploma to those in academia. This is complemented by clear first principles derivations, for example in the early sections on kinetic theory and adsorption mechanisms (a theme which runs through all sections of the book). The treatment of flow is impressive, however this would be enhanced with a section on transmission probabilities for molecular flow.

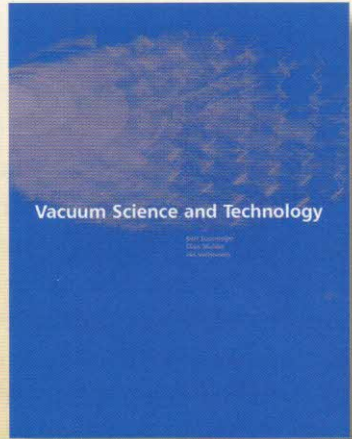
Pump mechanisms and their operational principles are comprehensively reviewed. A table (akin to that included for pressure gauges) summarising pump mechanisms, range of operation, typical applications and positive/negative features would have been useful.

The chapters on pressure measurement are probably the most clear and detailed I have seen published. Similarly the leak-detection chapter comprehensively covers theory and practical methods. The level of treatment given to sealing techniques and other components is deserved. However, as many processes and applications in vacuum rely fundamentally on mass flow control, more detail on these would have been a very useful addition.

The calculated examples are useful and the exercises are generally well constructed and relevant but in some cases 'worked solutions' would be helpful. Some of the black and white diagrams would be clearer with higher resolution e.g. cryopumps, ion sources and valves.

In the absence of references more examples of specific applications and a bibliography and directed reading resources are needed.

The English language translation is excellent, though there are a few minor typos (e.g. 'lucht' not 'air' in equation 3.120 p 151). A mistake though in the translation which does need correcting is the use of the word 'blocked' (first in section 3.7) – the correct term in this context is 'choked'.



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