

**Nanotechnology.** J. Menon. Essential Book, New Delhi, 2009.

In the book under review, author has tried to provide basic information about this field in 14 different chapters. The cover page is quite simple and sober, showing ions on it. However, it fails to reflect the importance of minuteness, which is the very real meaning of the word 'Nano'.

In the first chapter – Introduction, the meaning of 'nano' has been explained along with the evolution of the field. A brief history of nanotechnology in the form of insights of Richard Feynman and contributions of Eric Drexler has also been stated. But along with that, controversies and public policy related to the field have also been given in this chapter, which are quite irrelevant to the heading of this chapter. The second chapter deals with how this field has entered into distinct aspects of life, right from security systems to health, diagnostics, resources, water and energy. This is a good attempt to provide some very basic information which can state the importance of the field. Also possible future advances for improving healthcare and optimizing resource consumption thereby increasing our standard of living have been discussed. The author has claimed the improbable scenarios of nanorobots described by many science fiction writers which is unnecessarily mentioned.

Chapter three dealing with the application of nanotechnology in cancer treatment is an attempt to explain how nanoscale devices can help detect early stage cancer through a brief explanation of *in vivo* imaging. The concept of multifunctional therapeutics utilizing nanoscale devices has also been visualized. However, there is an irrelevant mention of iron oxide or hydrogel or gold nanoparticles without any background about it in any of the previous chapters. In the later part of this chapter, a separate topic titled 'Nanotechnology and Cancer Therapy' has been included, which seems unnecessary as the whole chapter deals with Nanotechnology for cancer treatment. At the end of the chapter, there is a detailed explanation of how cancer cells proliferate and invade other tissues, which actually must be explained at the beginning of the chapter.

After reading chapter three, the reader gets an impression that the author may now be interested in applications of nanotechnology in various sectors as he started with cancer. But chapter four, to our surprise, is titled 'Environmental Regulations'. Firstly, the flow of information is not justified by this sequence and secondly, in this chapter, the risk of nanotechnology to nature along with its benefits has been discussed. In addition, the content of this chapter is not aligned with the title of the chapter 'Environmental Regulations' as no laws or policy measures related to nanotechnology have been discussed here. The examples used in this chapter to explain the risks of nanotechnology are very unclear. In the fifth chapter, possible applications of nanotechnology in forest industry have been discussed. Here there is an attempt to explain how nanosized natural forest materials can provide an option for various applications in metallic, ceramic or plastic industries. However, there has not been enough focus on information about it. Research in this field has been discussed but key research challenges have been explained twice in the same chapter, revealing imprecision in writing. In the sixth, seventh, eighth and ninth chapters, continuous flow of contents has been maintained, discussing the potentiality of nanotechnology in improving agriculture and food processing, energy needs, solutions for water and space development programmes respectively. A nice attempt has been made to explain technologies which may have been in their developing stage at that time in their respective fields. However, the book loses its content continuity in the tenth chapter, 'Environmental Risks of Nanoparticles'. In this chapter, possible risks of nanoparticles and the measures to be taken are suggested. Assessment of toxicity in several ways has also been discussed. However, the same topics are repeatedly discussed under the same headings in the same chapter itself. This is very disappointing for an information seeker. Additionally, the risk of nanoparticles at the workplace has been discussed. It is surprising that the immediate next chapter is about nanoparticles in the workplace. Hence the objective of including the same topic in brief in the previous chapter is not clear. Brief in-

formation on the types of nanoparticles is also given in this chapter. Information on current regulation on supply of chemicals has been included, but its connection to nanomaterials is not discussed. In chapter twelve, 'Nanotechnology in Developing Countries', the lines 'In this paper, clarify understandings of nanotechnology and synthesize discussions on issues of relevance appropriateness and equity with respect to developing countries' has been repeated in page numbers 241 and 242. The author has used the word 'paper' for a 'chapter'. Ancient origins of nanotechnology which are more relevant to history, have been discussed in this chapter. It would have been more appropriate if this would have been included in the introduction. Here risks and benefits of nanotechnology and the long-term effects have been discussed which is again a repetition. In chapter thirteen, 'Ethical and Political Implication of Nanotechnology', areas of toxicity and regulations related to nanotechnology have been discussed again. There is discussion on ethics and arguments of patents, which is again a repetition of the points already covered in earlier chapters, and to the readers' dismay, continues in the last chapter, 'Intellectual Property Rights in Nanotechnology'. However, detailed information about copyrights and other aspects of property rights in nanotechnology is useful for the readers.

Overall, it is observed that the words written in the preface – 'the goal to describe nanotechnology in practical terms' has not been completely justified. The reader can lose the enthusiasm to know more about this newly emerging field because of randomly arranged chapters. The basic information on nanoparticles and their types, which is the base of nanotechnology has been neglected. Also, the content becomes less interesting because of multiple repetitions of many topics and loss of continuity in content. In conclusion, this book does not reach the expectations of a nanotechnology enthusiast.

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