
Book Reviews

Chemical Elements in the New Age

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The objects and the materials we see around us are made up of a handful of building blocks called elements. Now, we know of about 90-odd naturally occurring elements ranging from hydrogen to uranium. However, in ancient and medieval philosophy, the elements were thought to be in the form of four simple substances, viz. earth, fire, air and water. The material bodies were supposed to be made of these substances. The word 'element' was first used in its modern sense by Robert Boyle and it was clearly defined by Lavoisier in 1789 as 'the simplest form of matter'.

The book under review provides interesting reading material on some lesser known aspects of chemical elements of the New Age. Running through six chapters, the first chapter 'The World of Elements' after bringing home the concept of elements discusses their origin in the universe. The second chapter 'Elements Atom by Atom' provides an insight into the atomic structure and the Periodic Table. The remaining chapters of the book discuss respectively the common elements, rare elements, radioactive elements and man-made elements. Common elements

discussed in chapter 3 include hydrogen, helium, lithium, beryllium, boron, carbon, nitrogen, oxygen, fluorine, aluminium, copper, silver and gold, and silicon. Common as well as technological applications of these elements are highlighted. Description about some 'rare' elements like titanium, vanadium, gallium, germanium, zirconium etc. along with their varied applications appears in chapter 4.

Radioactive elements like polonium, francium, radium, uranium etc. and their uses form the subject matter of chapter 5. It is interesting to note that an isotope of polonium is used as a source of heat for generation of thermoelectric power in satellites. The radioactive element rancium has the unique property that it accumulates in cancerous tissues in the initial stage of malignancy. Therefore, early diagnosis of cancer can be made from the presence of francium. Radium is used chiefly as a source of radiation in medical treatment of cancers and in the industry for radiography. Uranium is today widely used as a fuel in nuclear reactors for generating electricity. It is also used in smaller reactors to produce radioisotopes which are used in medicine, agriculture and industry. Elements beyond uranium are called transuranic elements. An account of the discovery of such elements appears in the last chapter 'Man-made Elements'.

The book under review meant both for the layman and the scientist has been written in simple language and lucid style. Coloured illustrations and plates included in the book further

enhance its utility. However, there is a serious mistake in the book on page 14 where it is stated that 'An atom is extremely small and cannot be seen even under a very powerful microscope'. Also, the nomenclature of elements (approved by IUPAC, 1977) given on page 66 needs updating as specific names have since been given to various transuranic elements with atomic number greater than 103. These changes/corrections

are expected to be carried out in the future editions of the book.

Nonetheless, the book on the whole is useful and must find place in the shelves of all school and college libraries.

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