

during *Aquilaria* harvesting. All standing agarwood trees cannot be harvested in a single felling as it sometimes occurs in the case of timber trees. Hence, there is a need to only select trees with acceptable oleoresin quantity. For this purpose, the non-destructive techniques have been applied to agarwood trees in Indonesia using sonic tomograph and acousto-ultrasonic equipment. The instrument measures the changes in the resistivity and dielectric properties of the wood due to oleoresin formation. This enabled the authors to detect the oleoresin formation percentage in the trees.

For most of the high-value timbers like sandal (*Santalum album*), there is the classification grade that informs the sellers and buyers about the quality of the product. This enables them to have fair trade. The grading system for agarwood practised in different countries has been presented in chapter ten. The authors, Mohamed and Lee, have shown that there is no globally accepted standard for agarwood products. This is one of the main problems in global agarwood trading. International collaboration and discussion on this issue are needed to develop globally accepted agarwood classification.

In summary, we would like to mention some imprecisions regarding the book. First, the problem of *Aquilaria* species conservation has been discussed in most chapters. *Aquilaria* species are threatened and their native range is primarily confined to Southeast Asia. It seems that a chapter devoted to the attempts of regional (or global) IUCN estimation of *Aquilaria* species would be appropriate in this monograph. Secondly, it would be better if the data of different chapters were consistent with each other. For example, information on the total number of *Aquilaria* species differs – 21 species (e.g. chapters 1 and 3) or about 20 species (e.g. chapters 2 and 4). Finally, the book contains ten chapters by 22 authors from six countries. However, there is hardly any representation from other countries where *Aquilaria* species occur naturally and are being used (e.g. India, Vietnam, Thailand, Bangladesh, Laos, etc.). This situation is similar to the one reported by Rajendran¹ in this journal. However, this book can be considered as the first step to overcoming the lack of knowledge on *Aquilaria* and related agarwood species. The editor has brought to focus the incomprehension on

agarwood species. For example, that *A. malaccensis* is not a single agarwood species but there are 21 species of this genus and nine *Gyrinops* taxa distributed across Southeast Asia. We would like to conclude that agarwood is still truly the 'King of Incense'.

1. Rajendran, C. P., *Curr. Sci.*, 2016, **110**(5), 919–921.

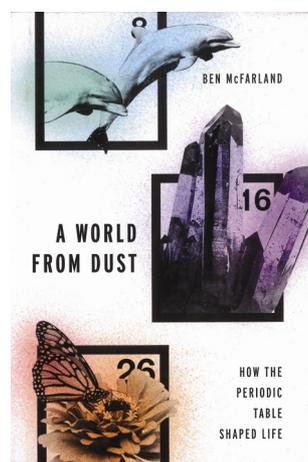
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A World from Dust: How the Periodic Table Shaped Life. Ben McFarland. Oxford University Press, 198 Madison Avenue, New York 10016, USA. 2016. xiv + 333 pages. Price: US\$ 34.95.

One of the fascinations for all is the never-ending question about the origin of life. Studies related to this quest necessarily involve biology, chemistry, phys-

ics and geology. The origin of life continues to be an interesting area of study and an increasing number of young chemists and biologists are drawn to this. This book is a good starting point for a young student, who is curious and wants to learn new ideas and concepts. It explains the origin of life from the point of view of chemistry and elements. When the chemical elements are involved, one needs to have the periodic table; the entire book deals with a foldable periodic table given at the beginning. The intricate relationship between chemistry and biology has been elegantly brought out in the book. From the periodic table (dominated by metals), one can see that only a handful of elements find use in biology and the rest are part of the earth's mantle. Another way to look at this, is that the metals which are abundant and available for immediate use were consumed by biology by creating new chemical reactions. The author also looks at the possible origins of the red colour of Mars, possible presence of water in Titan (moon around Jupiter) and Venus having ice from the chemistry perspective. He explains many of these employing simple chemical equilibrium and equations.

The earliest explosions – the Cambrian explosion (~500 million years ago) – could be an important focal point for the rapid development in biology. The Cambrian explosion over a period of 50 million years brought calcium and other minerals/elements to the surface, especially oceans. The chemistry of oceans underwent a marked change giving rise to new life-forms having shells. There is simultaneous growth of life forms from the oceans and the Cambrian explosion. The understanding of the various biomolecules and their historical evolution was used in describing the intricate relationship between the elements and the life forms. A stretch to this idea would be the evolution of many viruses and their associated diseases. Some of these may be of interest for students beginning their medical study.

The author has maintained the interest and pace throughout the book and the reading unfolds like a novel. The clever tips based on the periodic table get due attention. The idea of growing your own colony of bacteria, the energy contents in a chewable bear (gummy bear), the ignition of methane developed by bacteria, etc. keep the reader interested. These are easy experiments and would drive a

curious young reader to undertake such studies and enhance the involvement with science/chemistry. There are not many books in the market with these approaches.

This book is definitely fascinating to read, but one can find certain shortcomings. For example, the periodic table cannot be the answer to every possible natural phenomenon. The authors could have provided simpler explanations for photosynthesis, gene transfer, thermodynamics of collapsing structures, etc.

The book would definitely kindle the curiosity of a young reader and may not be fully appreciated by the practitioners of science say chemistry. The role of oxidation states of elements, organometallic chemistry, the diversity of organic molecules and other related developments of chemistry have not been elaborated in the book – but one may assume that it is about the development of life forms from a chemistry point of view.

Thus, this book is a good read. The evolution of life forms has been dis-

cussed through chemistry and chemical origin. I am sure a non-scientist would find this book interesting and in fact, fascinating.

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