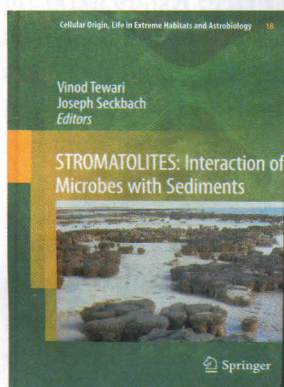


## Book Reviews



### ***Stromatolites : Interaction of Microbes with Sediments***

(751 p.) - 2011

*Vinod C. Tewari and Joseph Seckbach*

**Price :** 149.95 Euro

(Rs.10, 000 approx.)

**Published by :** Springer:

Series Cellular Origin, Life in Extreme Habitats and Astrobiology Volme 18, Heidelberg, Germany.

A suitable publication on **Stromatolites : Interaction of Microbes with Sediments**, the earliest evidence of life on planet earth in the entire universe, had been overdue for long for the students, researchers, astrobiologists and other professionals, interested in origin, evolution, diversification and destiny of life in the universe. The authors, Vinod C. Tewari and Joseph Seckbach, are congratulated for bringing out an advanced book on fundamental aspect when the scientists world over are looking forward to search for the extraterrestrial evidence of life on Mars, Europa and possibly on Moon.

The book with hard cover comprises 751 pages, 348 illustrations, including 143 coloured, and meticulously compiled subject matter to serve the intended scientific purpose. This book provides an overview on the formation of stromatolites as a result of interaction of microbes with sediments; already busting with reviews by renowned reviewers. The volume deals with ancient to modern examples of stromatolites and microorganisms, which are observed in various diverse environments such as marine, non-marine, lacustrine and extreme geographical areas covering almost the whole earth; some chapters appropriately deal with the latest instrumental techniques used for the study of microbes and stromatolites. Other chapters reveal updated data on stromatolites. The astrobiological implications of early microbiota, sulfur isotopic ratios and microbialites in extreme conditions on earth have opened up new vistas in search of extraterrestrial life. These chapters on biosedimentological, geomicrobiological, biogeochemical and astrobiological

studies are primarily meant for students, researchers and professional scientists, who need the latest developments in the field of sedimentology and its applied aspects.

The book is divided into seven parts, consisting of thirty four chapters, contributed by eighty-four authors from twenty seven countries. **Part 1** deals with **Archaean – Proterozoic Stromatolites and Microbiota**, containing seven chapters. **Part 2** contains five chapters dealing with **Phanerozoic Stromatolites**, devoted to the classical Phanerozoic localities of the world in Tethyan Ocean. **Part 3** is focuses on **Modern Stromatolites (Marine, Lacustrine, Hotprings )** and herein we find an excellent account of the presently-forming biogenic structures, with high quality colour microphotographs, scanning electron microphotographs, 16 rRNA gene sequences and Krypton–Argon confocal images of stromatolites from modern oceans. Seven chapters describe Modern Marine Stromatolitic Structures of the extreme habitats from Central Mexico in which the microbial mats and stromatolites have flourished, besides the normal marine examples. **Part 4** of the book is organized to give the **Modern Instrumental Techniques for the Study of the Stromatolites and Microbiota**. In this part, there are three chapters. The Micro Fourtier Transform Infrared (FTIR) spectroscopy, the Nano Secondary Ion Mass Spectrometer (Nano SIMS), Laser Raman Spectroscopy and Confocal Laser Scanning Microscopy (CLSM) relate to new techniques, now being used to study the earliest microfossils and stromatolites for their biogenicity, organic geochemical and isotopic signatures and three dimensional imaging of the microbiota. These techniques are considered very useful in future astrobiological studies, should there be life detected on other planets. In **Part 5** on **Geochemistry and Geomicrobiology of Stromatolites and Microbiota** eight chapters are included. Aside from other subjects, the implication of the speleothems in the paleomonsoon interpretation based on oxygen isotopes is attempted for the Indian Summer Monsoon. **Part 6** includes two chapters on **Astrobiology**. The first chapter has discussed the latest developments in the near future Mars Science/Life Detection Missions, including the US 2011 Mars Science Laboratory (MSL 11) and the ESA 2016 Pasteur Exo Mars. The second chapter is on the Sulfur Cycle on the Early

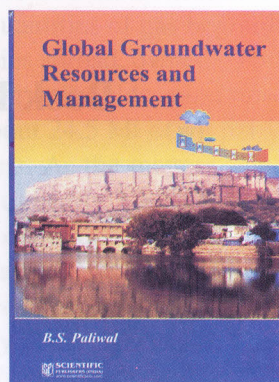
Earth: Implications for the search of life on Europa and elsewhere.

The last **Part 7** concerning **Summary, Conclusion and Future Prospects** by J. Seckbach and V.C.Tewari (editors of this book) gives an overview of the current status of the stromatolite research and gaps in knowledge to stimulate researches on the subject in future. Since present is key to the past, the modern stromatolites from the Shark Bay in Western Australia and Bahamas may reveal crucial information on the depositional system and the sediment–microbe relationship in which the earliest stromatolites must have been formed on earth and elsewhere. The subject index and the author index are appropriately included at the end.

Springer, the renowned publishers, are to be congratulated for the excellent organization and printing on acid free paper with attractive coloured plates and figures. The book be useful to the students of sedimentology and micropalaeontology/ microbiology and researchers in the area of Earth Science. The book is strongly recommended for the institutional libraries. I am sure its reading would motivate the students and researchers in India and abroad for high and extensive researches on the discussed problems.

- O. P. Varma

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**Global Groundwater Resource and Management**

(528 p.) - 2010

B. S. Paliwal (Ed.)

**Offer Price:** Rs. 2950.00

**Published by:** Scientific Publishers (India),

**Jodhpur - 342 001**

The volume titled “**Global Groundwater Resources and Management**”, edited by Prof. B.S. Paliwal, contains 31 selected papers contributed to the 33<sup>rd</sup> International Geological Congress at the General Symposium on Hydrogeology at Oslo, Norway, in August, 2008. In this Volume, the contributed papers are classified under the following five sections:

1. Groundwater Resources and Management,
2. Hydrogeological Conditions, Groundwater Assessment, and Modeling,
3. Hydrogeochemistry and Contamination of Groundwater Resources,
4. Exploitation of Groundwater and Recharge, and
5. Hazardous Groundwater Conditions.

The **First** paper titled “**Depleting Groundwater Resources in the Great Thar Desert of India**” by B.S. Paliwal and S.C. Paliwal gives a brief account of the hydrogeology of the Thar Desert of Rajasthan, including chemical characteristics of the groundwater and lowering of groundwater levels. The **Second** paper by N. Mylopoulos and P. Sidiropoulos suggests a stochastic model of an over-exploited aquifer from Greece. The model is used to predict the response of the aquifer under various management scenarios. The **Third** paper titled “**Stages of Alluvial Deposits Development and Their Hydraulic Properties**” by P.P. Nagevich and O.V. Chebotareva gives an account of the hydraulic characteristics of the alluvial aquifers of Neogene-Quaternary age from the Republic of Uzbekistan. Changes in the hydraulic properties, viz. storativities of aquifers at different depths are attributed to varying geostatic pressures caused by the overlying sediments.