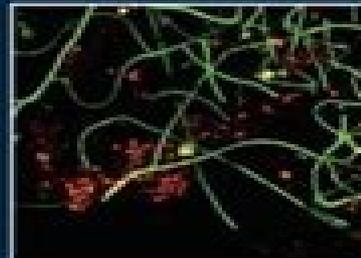
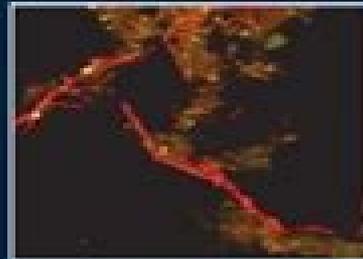
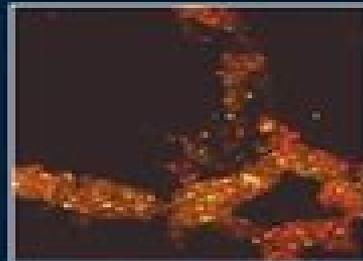


Sulphate-reducing Bacteria

Environmental and Engineered Systems



Edited by
Larry L. Barton and
W. Allan Hamilton

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The Sulphate Reducing Bacteria

Jicheng Xie



The Sulphate Reducing Bacteria:

The Sulphate-Reducing Bacteria John Raymond Postgate, 1979-10-18 Classification Cultivation and growth Structure and chemical composition Metabolism Evolution Ecology and distribution Economic activities Epilogue

Sulphate-Reducing Bacteria Larry L. Barton, W. Allan Hamilton, 2007-05-31 Publisher description **The Sulphate-reducing Bacteria** J.r Postgate, 1984 *Sulfate-Reducing Bacteria* Larry L. Barton, 2013-06-29 In this well illustrated reference contributors summarize current research on sulfate reducing bacteria and examine their relationship to biotechnology processes This approach enables researchers to identify and define appropriate questions for future research Chapters examine the biochemical and physiological characteristics of sulfate reducing eubacteria and archaeobacteria and review environmental and industrial activities of these bacteria This volume features the first review on bioremediation by sulfate reducing bacteria *Sulfate-Reducing Bacteria* Larry Barton, 1995-05-31 In this well illustrated reference contributors summarize current research on sulfate reducing bacteria and examine their relationship to biotechnology processes This approach enables researchers to identify and define appropriate questions for future research Chapters examine the biochemical and physiological characteristics of sulfate reducing eubacteria and archaeobacteria and review environmental and industrial activities of these bacteria This volume features the first review on bioremediation by sulfate reducing bacteria **Sulphate-Reducing Bacteria** Larry L. Barton, W. Allan Hamilton, 2007-05-31 The sulphate reducing bacteria SRB are a large group of anaerobic organisms that play an important role in many biogeochemical processes Not only are they of early origins in the development of the biosphere but their mechanisms of energy metabolism shed light on the limits of life processes in the absence of oxygen They are widely distributed in nature and are regular components of engineered systems including for example petroleum reservoirs and oil production facilities SRB are currently subject to extensive genomic studies which are yielding fresh understanding of their basic biochemical mechanisms and aiding in the development of novel techniques for the analyses of their environmental roles This volume provides a timely update on these important microorganisms from basic science to applications and will therefore serve as a valuable resource for researchers and graduate students in the fields of microbial ecology microbial physiology bioengineering biogeochemistry and related areas of environmental science **The Sulphate-reducing Bacteria** , 1984 **Sulfate-Reducing Bacteria and Archaea** Larry L. Barton, Guy D. Fauque, 2022-05-16 The abundance of sulfate reducing bacteria and archaea SRBA is impressive and new isolates are being reported continuously A few decades ago only two genera of sulfate reducing bacteria SRB had been identified As of 2018 92 genera containing more than 420 species of SRB have been isolated and characterized and there are several species of archaea This book addresses the development of the research with SRBA and includes historical background of this field Biochemical characterization of the enzymes cytochromes and electron carriers involved with dissimilatory sulfate reduction are reviewed and the presence of relevant genes in cultured and uncultured SRBA are

assessed using genome analysis The contributions of transmembrane electron transport complexes as related to cell energetics are discussed This book highlights the unique cellular and molecular features of the SRBA and discusses the biochemical interactions behind their metabolic capabilities which enable SRBA to grow in extreme environments Examples are provided to detoxify and alleviate pollution situations to evaluate mechanisms proposed for corrosion of ferrous metals and to examine the effects of SRB on human and animal hosts

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Optimization of the Electron Donor Supply to Sulphate Reducing Bioreactors Treating Inorganic Wastewater Luis Reyes-Alvarado, 2018-09-03 The main objective of this research was to optimize the electron donor supply in sulphate reducing bioreactors treating sulphate rich wastewater Two types of electron donor were tested lactate and slow release electron donors such as carbohydrate based polymers and lignocellulosic biowastes Biological sulphate reduction was evaluated in different bioreactor configurations the inverse fluidized bed sequencing batch and batch reactors The reactors were tested under steady state high rate and transient state feeding conditions of electron donor and acceptor respectively The results showed that the inverse fluidized bed reactor configuration is robust and resilient to transient and high rate feeding conditions at a hydraulic retention time as low as 0 125 d The biological sulphate reduction was limited by the COD sulphate ratio 82% either using carbohydrate based polymers or lignocellulosic bio wastes in batch bioreactors The biological sulphate reduction was limited by the hydrolysis fermentation rate and by the complexity of the slow release electron donors

The Sulfate-reducing Bacteria J. Martin Odom, Rivers Singleton, 1993

Integrated Sand Management For Effective Hydrocarbon Flow Assurance, 2015-06-15 This Handbook provides solutions to the fundamental issues associated with wells and reservoirs experiencing sanding problems especially in deepwater environments Sand Management is a massive challenge for the petroleum industry as it extends its exploration activities to new frontiers Challenging ultra deepwater High Pressure High Temperature HP HT and Arctic

environments require engineers to drill more complex wells and manage more complex reservoirs the majority of which are prone to massive sand production Covering such fundamentals as how to maximize individual wells and field development performance as well as how to minimize operational cost non productive time and guarantee flow assurance across the entire composite production system from reservoirs through the wellbore to the topside and flow lines this handbook explains that the biggest challenge facing operators is the shortage of sand management personnel and helps companies realize the value of their assets Reference for knowledge transfer and skills development in sand management for effective flow assurance Emphasis on HP HT and deepwater environments Meets the needs of new and practising engineers alike as well as non technical personnel supporting the offshore industry

Handbook of Water and Wastewater Microbiology Duncan Mara,Nigel J. Horan,2003-08-07 Access to safe water is a fundamental human need and therefore a basic human right Kofi Annan United Nations Secretary General Edited by two world renowned scientists in the field The Handbook of Water and Wastewater Microbiology provides a definitive and comprehensive coverage of water and wastewater microbiology With contributions from experts from around the world this book gives a global perspective on the important issues faced in the provision of safe drinking water the problems of dealing with aquatic pollution and the processes involved in wastewater management Starting with an introductory chapter of basic microbiological principles The Handbook of Water and Wastewater Microbiology develops these principles further ensuring that this is the essential text for process engineers with little microbiological experience and specialist microbiologists alike Comprehensive selection of reviews dealing with drinking water and aquatic pollution Provides an understading of basic microbiology and how it is applied to engineering process solutions Suitable for all levels of knowledge in microbiology from those with no background to specialists who require the depth of information

The Sulfate-Reducing Bacteria: Contemporary Perspectives James Odom,Rivers Jr. Singleton,2011-12-21 Sulfate reducing bacteria comprise a diverse and ecologically interactive group of anaerobic prokaryotes which share an extraordinary trait growth by sulfite respiration with hydrogen sulfide as a major end product Sulfate reducers are found in diverse environments ranging from estuaries to geological oil bearing formations They have attracted considerable scientific and commercial interest These organisms have been actively investigated by researchers in microbial energetics protein chemistry ecology and more recently molecular biology This interest has increased greatly over the past decade and this volume presents the first book length summary of our knowledge of sulfate reducing bacteria in nearly 10 years Featuring an introduction by the eminent microbiologist John Postgate and comprehensive reviews from recognized authorities this book will be of interest to microbiologists with interests in physiology evolution and ecology

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Microbial Extracellular Polymeric Substances Jost Wingender, Thomas R. Neu, Hans-Curt Flemming, 2012-12-06 Microbial extracellular polymeric substances EPS are the key components for the aggregation of microorganisms in biofilms flocs and sludge They are composed of polysaccharides proteins nucleic acids lipids and other biological macromolecules EPS provide a highly hydrated gel matrix in which microbial cells can establish stable synergistic consortia Cohesion and adhesion as well as morphology structure biological function and other properties such as mechanical stability diffusion sorption and optical properties of microbial aggregates are determined by the EPS matrix Also the protection of biofilm organisms against biocides is attributed to the EPS Their matrix allows phase separation in biofiltration and is also important for the degradation of particulate material which is of great importance for the self purification processes in surface waters and for waste water treatment

Recent Advances in Anaerobic Bacteriology B.S. Drasar, B.I. Duerden, Michael J. Hudson, R.J. Lysons, 2012-12-06 The Anaerobe Discussion Group ADG organised has four International College Symposia all at Churchill Cambridge The first was held in July 1979 the second in July 1981 the third in July 1983 and this the fourth on July 26-28th 1985 The proceedings of each of these meetings have been published see below As on previous occasions the scientific programme was designed appeal to the wide range of interests represented by ADG members The meeting was attended by delegates from all over the world including medical microbiologists veterinarians dentists biochemists geneticists and scientists from several other disciplines all of whom share a common interest in anaerobic microorganisms The interchange of scientific information and ideas between the delegates in such pleasant surroundings was as always a valuable and rewarding experience Unlike previous Biennial Symposia in the series this meeting was sponsored by a number of companies rather than by a single sponsor Despite some initial concern by the organising committee this arrangement worked well and we are extremely grateful to all the companies who supported the meeting so generously The names of the sponsors are listed individually in the acknowledgements section We were also very pleased to welcome those companies who took part in the Trade Show during the meeting This book contains the papers given by invited contributors followed by abstracts poster of the demonstration presented at the meeting

Industrial Minerals and Extractive Industry Geology P. W. Scott, Colin Malcolm Bristow, 2002

Biochemistry of microbial degradation Colin Ratledge, 2012-12-06 Life on the planet depends on microbial activity The recycling of carbon nitrogen sulphur oxygen phosphate and all the other elements

that constitute living matter are continuously in flux microorganisms participate in key steps in these processes and without them life would cease within a few short years The comparatively recent advent of man made chemicals has now challenged the environment where degradation does not occur accumulation must perforce take place Surprisingly though even the most recalcitrant of molecules are gradually broken down and very few materials are truly impervious to microbial attack Microorganisms by their rapid growth rates have the most rapid turn over of their DNA of all living cells Consequently they can evolve altered genes and therefore produce novel enzymes for handling foreign compounds the xenobiotics in a manner not seen with such effect in other organisms Evolution with the production of micro organisms able to degrade molecules hitherto intractable to breakdown is therefore a continuing event Now through the agency of genetic manipulation it is possible to accelerate this process of natural evolution in a very directed manner The time scale before a new microorganism emerges that can utilize a recalcitrant molecule has now been considerably shortened by the application of well understood genetic principles into microbiology However before these principles can be successfully used it is essential that we understand the mechanism by which molecules are degraded otherwise we shall not know where best to direct these efforts

Biological Aspects of the Control of Sulphate Reducing Bacteria A. P. Sharma, University of Heriot-Watt, 1984

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