

1st ed. 2016, XXVI, 405 p. 53 illus., 35 illus. in color.

 Printed book**Hardcover**

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M.D. Max, A.H. Johnson

Exploration and Production of Oceanic Natural Gas Hydrate

Critical Factors for Commercialization

- ▶ Presents a unique discussion of renewable and non-renewable energy and the transition from a vertically organized energy industry to a horizontally-organized energy industry based on renewable energy
- ▶ Contains original data relevant to late Pleistocene climate change in the Mediterranean region
- ▶ Offers a unique discussion of the natural gas hydrate resource with respect to unique characteristics that offer opportunities for innovation and cost-savings
- ▶ Contributes a relevant guide to the transition to a renewable energy paradigm
- ▶ Puts forward a unique discussion of existing ultra-deepwater technology and practices and of new technology for development of natural gas hydrate

This book describes aspects of the natural gas hydrate (NGH) system that offer opportunities for the innovative application of existing technology and development of new technology that could dramatically lower the cost of NGH exploration and production. It is written for energy industry professionals and those concerned with energy choices and efficiencies at a university graduate level. The NGH resource is compared with physical, environmental, and commercial aspects of other gas resources. Our theme is that natural gas can provide for base and peak load energy demands during the transition to and possibly within a renewable energy future.

Contents: 1. Energy Overview: Prospects for Natural Gas; 2. Economic Characteristics of Deepwater Natural Gas Hydrate; 3. Exploration for Deepwater Natural Gas Hydrate; 4. Potential High Quality Reservoir Sediments in the Gas Hydrate Stability Zone; 5. Valuation of NGH Deposits; 6. Deepwater Natural Gas Hydrate Innovation Opportunities; 7. Leveraging Technology for NGH Development and Production; 8. New Technology for NGH Development and Production; 9. Offshore Operations and Logistics; 10. Energy Resource Risk Factors; 11. Commercial Potential of Natural Gas Hydrate



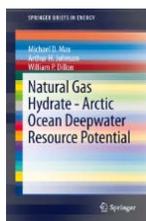
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Michael Max has a broad background including geology, geophysics, chemistry, acoustics, and information technology. Max has a BSc (History, Geology) from the University of Wisconsin, Madison, an MSc (Petroleum & Economic Geology) from the University of Wyoming, and a PhD (Geology) from Trinity College, Dublin, Ireland. He has worked as a geologist / geophysicist for the Geological Survey of Ireland, the Naval Research Laboratory, Washington, DC in shallow water acoustic propagation prediction, and the NATO Undersea Research Center, La Spezia, Italy in at-sea experiments and operational technology applications. From 1999 to 2011 Max was CEO and Head of Research for Marine Desalination Systems LLC, which established a hydrate research laboratory and explored industrial applications of hydrate chemistry. He has been an author on many scientific publications and three textbooks and over 40 patents and patent applications. He assisted in the writing of the U.S. Gas Hydrate Research and Development Act of 2000. Michael was appointed by the Secretary of Energy to the Methane Hydrate Advisory Committee of the Department of Energy for 2014--2017, and is Co-Chair, Diving Committee of the Marine Technology Society. He has been a principal of HEI since 2001 and is also an Adjunct Professor in the School of Geological Sciences of University College, Dublin, Ireland. Max is a member of the Geological Society of America, Geological Society of London, American Geophysical Union, American Chemical Society, Explorers Club, Coast Guard Auxiliary, Acoustical Society of America, and American Association for the Advancement of Science, amongst others.

Arthur H. Johnson is a founding partner of Hydrate Energy International, LLC (HEI) and is engaged in energy consulting in the U.S. and throughout the world. Prior to forming HEI in 2002, Art was a geologist with Chevron for 25 years where his career included most aspects of hydrocarbon exploration and development. Art was instrumental in initiating Chevron's Gulf of Mexico program for gas hydrate studies in 1995. He has advised Congress and the White House on energy issues since 1997, and chaired advisory committees for several Secretaries on Energy. He has an on-going role coordinating the research efforts of industry, universities, and government agencies. Art served as the Gas Hydrate Lead Analyst for the "Global Energy Assessment", an international project undertaken by the International Institute for Applied Systems Analysis (IIASA) of Vienna, Austria and supported by the World Bank, UN organizations, and national governments that evaluated the energy resource base of the entire planet with a view to addressing energy needs in the decades to come. He is Chair of the Gas Hydrate Committee of the Energy Minerals Division of the American Association of Petroleum Geologists (AAPG) and has a continuing role as an AAPG Visiting Geoscientist. Art has published over 80 papers and articles, along with several books. These cover a diverse range of topics that include geology, geophysics, economics, and astrogeology.

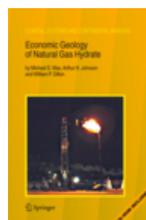
Other titles published by Michael D. Max and Arthur H. Johnson:



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Michael D. Max, Arthur H. Johnson and William P. Dillon, 2013, XI, 113p., ISBN: 978-3-319-02507-0

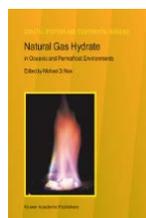
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Michael D. Max, Arthur H. Johnson and William P. Dillon, 2006, XXI, 343p., ISBN: 978-1-4020-3971-3

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► **Natural Gas Hydrate in Oceanic and Permafrost Environments,**

Michael D. Max (Ed.), 2003, XIV, 415p., 107 b/w illus., ISBN: 978-1-4020-1362-1

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