Processes

an Open Access Journal by MDPI

CiteScore: 5.5
Impact Factor: 2.8

Special Issue Reprint

Production of Energy-Efficient Natural Gas Hydrate

Edited by: Tao Yu , Zhenyuan Yin , Bingbing Chen , Pengfei Wang and Ying Teng

Natural gas hydrate represents a significant potential energy resource for the future, yet its path to commercial production requires overcoming substantial scientific and technical hurdles. This Reprint, entitled “Production of Energy-efficient Natural Gas Hydrate”, is dedicated to presenting the latest progress in addressing these challenges. The collected research spans the entire value chain, from fundamental molecular-scale studies to field-scale simulations and environmental impact assessments. This Reprint consolidates cutting-edge findings on core topics essential for advancing the field. These include the fundamentals of gas hydrate phase transition, the development of novel production technologies, and the comprehensive characterization of hydrate resources. A significant focus is placed on understanding and mitigating environmental impacts, such as those related to climate and geohazards. The issue also explores critical areas like flow assurance in production systems, the application of hydrate science for CO2 capture and storage, and the use of advanced numerical simulations for prediction and scaling. By synthesizing a wide array of experimental, theoretical, and simulation-based research, this Reprint serves as a vital reference on the current state of knowledge and the innovative approaches driving the efficient and responsible development of natural gas hydrates.

mdpi.com/books/reprint/12067