Special Issue

Advanced Technologies in Gas Hydrate: Challenges and Prospects

Message from the Guest Editor

Gas hydrate deposits, typically located in permafrost regions and deep oceanic areas, are potential sources of hydrocarbons. Gas production from these hydrates relies on dissociation mechanisms driven by changes in pressure and temperature. Various methods for dissociation include depressurization, thermal stimulation, inhibitor injection, and chemical exchange (e.g., CO2), or a combination of these techniques. However, dissociation can lead to unintended methane release, thereby increasing greenhouse gas emissions. The complex nature of hydrate formation and dissociation involves coupled multiphase flow, heat transfer, and geomechanics in porous media, necessitating systematic experimentation, numerical simulation, and field studies for accurate prediction and reservoir characterization.

- Coupled flow and geomechanics in gas hydrate deposits in marine or permafrost environments;
- Hydrate dissociation and methane release;
- Laboratory experiments related to gas hydrates;
- Field-scale simulations and analyses;
- Applications of machine learning in gas hydrate research;
- Wellbore stability;
- Surface subsidence related to gas hydrate production.

Guest Editor

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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