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Recent Advances in Adsorption and Diffusion of Shale Gases

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Message from the Guest Editors

Natural gas, primarily consisting of methane, has become one of the most attractive energy sources among fossil fuels for its considerable reserves, economic efficiency, and low emission. The mechanisms of diffusion and adsorption of shale gas and CO2 have been repeatedly shown to play significant roles in the transport, storage, and recovery of shale gas resources, but there remain uncertainties in the scientific and engineering understanding of these processes. Accurate predictions of shale gas well performance, during primary recovery and CO2 enhancing gas recovery, still face many challenges.

This Special Issue aims at gathering new research contributions (in the form of research articles, review articles and short communications) on the diffusion and sorption of shale gases. We welcome submissions from different research areas, from science to engineering, and to cover theory, experiment, and application. Topics in this Special Issue include, but are not limited to, diffusion and transport theories and processes of shale gas and CO2, carbon capture, utilization, and storage technologies (CCUS), and shale gas well performance and field observations.

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Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

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