

How is adsorption energy distributed in a shale gas reservoir?

The distribution of adsorption energy in this model is directly related to the pore size distribution of the samples, and the gas resources in a single pore and total gas for a whole shale gas reservoir can be evaluated Li et al. (2019a) simplified local-density (SLD) model
 $n_{EX} = A_2 \frac{\rho(z) - \rho_{bulk}}{dZ}$

Which shale gas reservoirs should be explored?

The fundamental research on deep and ultra-deep marine, marine-continental transitional, and lacustrine shale gas reservoirs needs to be further investigated, and they will be important targets for future expanding exploration and development.

Which Shale is dominated by inorganic storage space?

Continental/marine-continental transitional shale with type II and/or type III kerogen is often dominated by inorganic storage space, and OM pores make little contribution to the total porosity (Gao et al., 2018; Kuang et al., 2020; Xiao et al., 2021).

How is shale gas extracted?

Shale gas is extracted directly from organic-rich shale, which distinguishes it from conventional natural gas (Zou et al., 2010).

What is the adsorption capacity of shale?

The total adsorption capacity of shale for a binary mixed gas ($CH_4 + CO_2$ or $CH_4 + N_2$) is between the adsorption capacity of its two constituent pure gases, and the increase in proportion of gas component with stronger adsorption capacity is beneficial to the increase in the total adsorption capacity (Du et al., 2020; Zhang et al., 2020a) (Fig. 6b).

How much shale gas is produced in 2021?

In 2021, shale gas production in the United States exceeded $7.638 \times 10^{11} m^3$ (Novi Labs, 2022; Zou et al., 2022a); By 2050, it is expected that more than 92% of dry natural gas production in the United States will come from tight and shale gas resources, which can reach $1.11 \times 10^{12} m^3$ (U.S. Energy Information Administration, 2022).

Results indicate that Marcellus unconventional shale reservoirs could support both short- and long-term energy storage at capacities of 100-1000 kWe per well. The results indicate that ...

This study evaluated the feasibility of using partially depleted hydraulically fractured shale gas wells for energy storage using compressed natural gas. We developed a conceptual reservoir ...

Shale gas energy storage station

The financial liability associated with an inactive shale gas lateral can be lifted if these wells are re-purposed into hydrogen storage repositories. From a technical perspective of hydrogen ...

Shale gas storage stations use depleted reservoirs or salt caverns - nature's Tupperware - to hold natural gas. Advanced tech like hydraulic fracturing monitoring ensures these "balloons" ...

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