

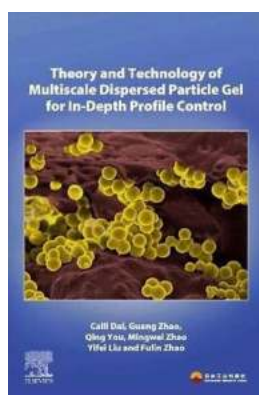
Theory And Technology Of Multiscale Dispersed Particle Gel For In Depth Profile

In the oil and gas industry, reservoir profiling plays a crucial role in understanding the subsurface characteristics of a reservoir. To obtain an accurate in-depth profile, advanced technologies are constantly being developed and refined. One such technology that has gained significant attention is the Multiscale Dispersed Particle Gel (MDPG).

What is Multiscale Dispersed Particle Gel (MDPG)?

MDPG is a breakthrough technology that enhances oil and gas recovery by altering the fluid flow within the reservoir. It consists of a gel-like substance composed of dispersed particles of different sizes. These particles work collectively to alter the mobility of fluids within the reservoir, thus improving the sweep efficiency and ultimate recovery.

The concept behind MDPG is based on the principle of selective plugging. The dispersed particles present in the gel selectively plug the high-permeability zones or channels within the reservoir. This allows for a more even distribution of fluid flow across the entire reservoir, reducing the bypassing of oil or gas and improving recovery.



Theory and Technology of Multiscale Dispersed Particle Gel for In-Depth Profile Control

by Michael Weinreb (Kindle Edition)

★★★★☆ 4.6 out of 5

Language : English

File size : 32682 KB

Text-to-Speech : Enabled

Screen Reader : Supported

Enhanced typesetting : Enabled
Word Wise : Enabled
Print length : 347 pages
Item Weight : 11.3 ounces
Dimensions : 5.79 x 0.67 x 8.78 inches



Advantages of Multiscale Dispersed Particle Gel:

MDPG offers several advantages over traditional reservoir profiling methods. Some of these advantages include:

1. Enhanced Sweep Efficiency:

By selectively plugging high-permeability channels, MDPG ensures that the injected fluid is distributed evenly across the entire reservoir. This significantly improves the sweep efficiency, enabling better recovery of oil or gas.

2. Reduced Bypassing:

The gel-like nature of MDPG ensures that the dispersed particles remain in place, preventing them from migrating or washing out of the reservoir. This reduces the bypassing of fluids, maximizing their contact with the oil or gas and increasing recovery.

3. Compatibility:

MDPG is compatible with various reservoir types and fluids, including conventional and unconventional reservoirs. It can be tailored to meet the specific requirements of each reservoir, making it a versatile technology for enhanced oil and gas recovery.

4. Cost-Effectiveness:

MDPG offers a cost-effective solution for reservoir profiling. Its application requires minimal additional equipment and can be easily integrated into existing operations without significant modifications. This makes it an attractive option for oil and gas companies looking to optimize their production.

Application of Multiscale Dispersed Particle Gel:

MDPG finds extensive application in a wide range of reservoir conditions. Some of the common applications include:

1. Heterogeneous Reservoirs:

MDPG is highly effective in heterogeneous reservoirs where there are significant variations in permeability. The selective plugging action of dispersed particles helps to achieve a more uniform sweep across the entire reservoir, resulting in improved recovery.

2. Waterfloods:

In waterflood operations, MDPG can be injected to divert the injected water away from high-permeability streaks. This prevents the water from bypassing the oil, allowing for better displacement and recovery efficiency.

3. Mature Fields:

MDPG can be used in mature fields to improve oil and gas recovery. By altering the fluid flow pattern, it helps to access untapped reserves and enhances overall production in declining fields.

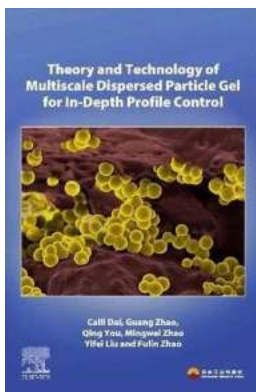
The Future of Multiscale Dispersed Particle Gel:

The theory and technology of Multiscale Dispersed Particle Gel continue to evolve as researchers explore new possibilities and optimize its performance. Ongoing research aims to further enhance the selectivity and effectiveness of

dispersed particles, making the technology even more efficient in altering fluid flow within reservoirs.

Additionally, efforts are being made to develop MDPG formulations that are environmentally friendly and have minimal impact on the reservoir ecosystem. These advancements will enable wider adoption of the technology in the industry.

The theory and technology of Multiscale Dispersed Particle Gel offer a promising approach to enhance oil and gas recovery in reservoirs. By selectively plugging high-permeability zones and channels, MDPG improves sweep efficiency and reduces bypassing, leading to increased recovery. Its compatibility, cost-effectiveness, and versatility make it an attractive option for oil and gas companies looking to optimize their production. With ongoing research and development, the future of Multiscale Dispersed Particle Gel looks promising, offering further advancements in reservoir profiling.



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Theory and Technology of Multiscale Dispersed Particle Gel for in-depth Profile Control systematically introduces concepts surrounding preparation principles and methods of DPG particles. The whole preparation process can be divided into two major stages: bulk gel crosslinking reaction period and DPG particle preparation period. The effects of bulk gel strength, shearing time, shearing rate and bulk gel-water ratio on PDPG particles are also systematically analyzed. Zirconium bulk gel, phenolic resin bulk gel, and organic-inorganic cross-linked bulk gel with short gelation time on the ground are introduced, along with gelation properties, gelation influencing factors, thermal stability and applicable conditions.

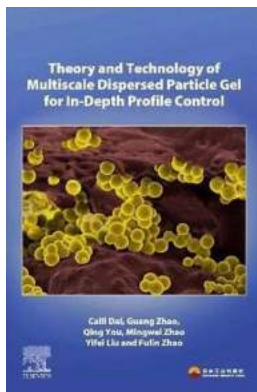
This book systematically describes the theory and technology of multiscale dispersed particle gel which shows promise as an acceptable alternative to conventional water technologies needed for enhanced oil recovery in high water cut mature oilfields.

- Systematically describes the theory and technology of multiscale dispersed particle gel
- Shows the details of each technology and how easy it is to achieve industrial production of DPG (dispersed particle gel particles)
- Presents technical achievements from 20 successful, established industrial production lines and 17 oilfields at home and abroad
- Includes the development of three new technologies based on DPG particles



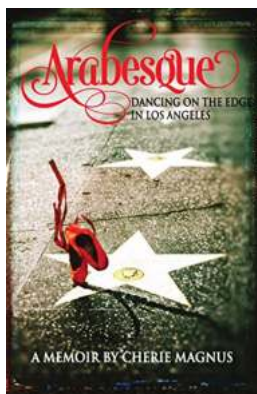
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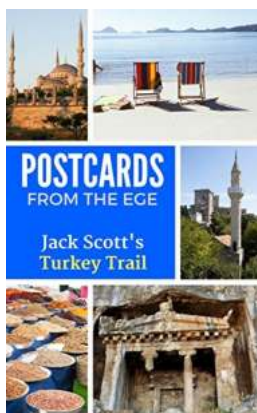
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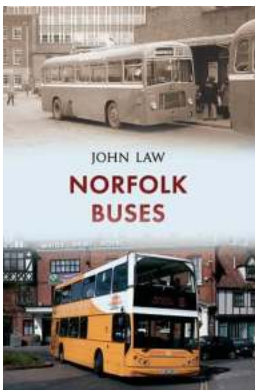
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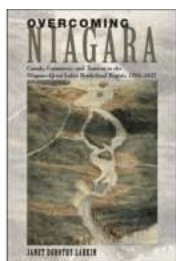
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