a program scenario that is an accurate description of what the computer program contains, and a translation of its educational objectives. Producing program contents using a number of authoring programs. Preparing the teacher's guide and student activities booklet. Building two measurement tools: the achievement test to measure the level of cognitive achievement, and the observation card to measure the skill performance of intonation skills, and to ensure their validity and reliability. Evaluating the validity of the computerized program by ensuring the validity of its content and applying it to an exploratory sample. Applying the computerized program to the study sample, which consisted of (72) seventh-grade female students in basic education.

**Conclusion**

In light of the results of the current study, the researcher reached the following conclusions:

- The use of computerized programs in teaching Tajweed has a significant impact on developing Tajweed skills (cognitive and performance), better than the effect of the traditional method.
- Understanding and mastery of cognitive and performance intonation skills increases with increased use.

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## THE LATEST TECHNOLOGIES USED TO INCREASE OIL PRODUCTION FROM DEPLETED LAYERS WITH POOR PERMEABILITY

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**Abstract**: As global energy demands continue to rise, the need to maximize oil production from existing reservoirs becomes increasingly vital. Depleted layers with poor permeability pose a significant challenge in oil extraction, requiring innovative technologies to enhance production rates. This report explores the latest advancements in technology that are being utilized to increase oil production from such challenging reservoirs, focusing on methods designed to overcome poor permeability and revitalize depleted layers.

**Key words**: global energy, oil, Carbon dioxide, EOR methods.

**Introduction**

As global energy demands persistently rise, maximizing oil production from existing reservoirs becomes crucial. However, one of the major challenges lies in extracting oil from depleted layers with poor permeability. These reservoirs have limited natural flow paths, hindering the efficient recovery of oil. To overcome this obstacle, the oil industry has been relying on cutting-edge technologies and innovative techniques. This report explores the latest advancements in technology that are being utilized to increase oil production from depleted layers with poor permeability. By harnessing these technologies, the industry aims to enhance oil recovery rates, optimize reservoir utilization, and meet the ever-growing energy needs of the world.

**Results and discussion**

Hydraulic fracturing, or fracking, has revolutionized oil extraction from low-permeability

reservoirs. The technique involves injecting high-pressure fluids into the reservoir, creating fractures in the rock formation and enabling the flow of oil. Advanced fracking technologies, such as horizontal drilling and multi-stage fracturing, have significantly improved the efficiency and effectiveness of this method. By accessing a larger surface area of the reservoir, fracking enhances oil production from depleted layers with poor permeability.

Enhanced oil recovery techniques aim to improve oil production from depleted reservoirs by altering the fluid behavior and reservoir conditions. Common EOR methods include [1-4] fig1:

- Steam Injection: Steam injection involves injecting high-pressure steam into the reservoir to heat the oil, reducing its viscosity and facilitating its flow. This method is particularly effective for heavy oil extraction from depleted layers with poor permeability.
- $CO_2$ Injection: Carbon dioxide ($CO_2$) injection involves injecting $CO_2$ into the reservoir, which acts as a displacing agent, pushing the oil towards production wells. This method helps increase oil recovery from depleted layers with poor permeability while simultaneously sequestering $CO_2$, contributing to carbon capture and storage efforts.
- Chemical Flooding: Chemical flooding involves injecting chemicals, such as polymers or surfactants, into the reservoir to alter the fluid properties and improve oil mobility. This technique assists in displacing oil from depleted layers with poor permeability and enhancing production rates.

Nanotechnology offers promising solutions for increasing oil production from depleted layers with poor permeability. Nano-sized particles can be engineered and injected into the reservoir to alter the rock's properties, improving permeability and facilitating oil flow. Nanofluids, consisting of nanoparticles suspended in a carrier fluid, can also be used to reduce oil viscosity, enhance sweep efficiency, and increase oil recovery.

Advancements in reservoir characterization and simulation techniques have greatly aided the understanding and optimization of oil production from depleted layers with poor permeability. Advanced imaging technologies, such as 3D seismic surveys, enable a comprehensive understanding of the reservoir's geometry, heterogeneity, and fluid distribution. By integrating this data into reservoir simulation models, engineers can predict reservoir behavior, optimize production strategies, and improve recovery rates.

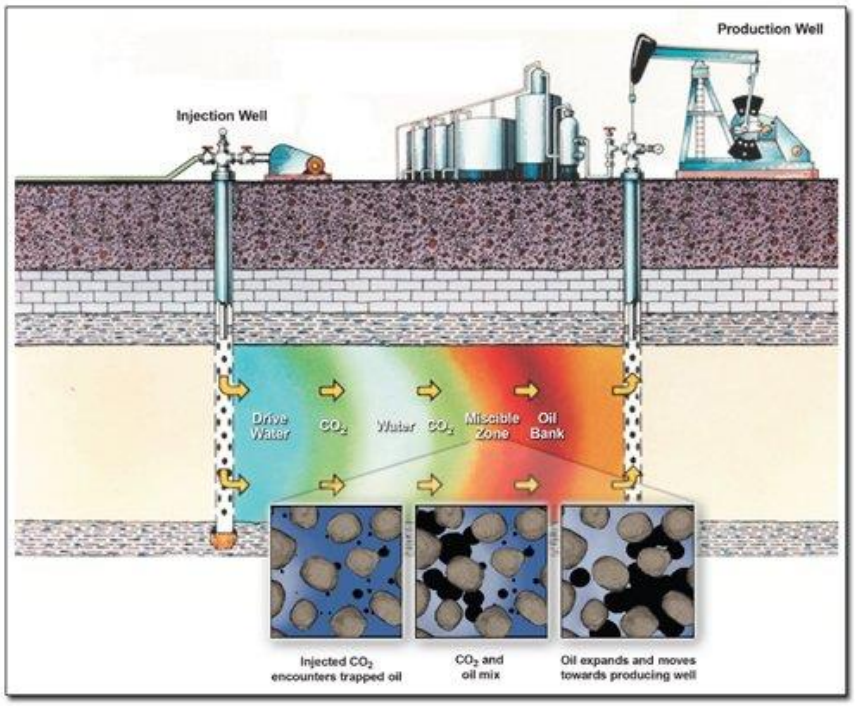


Fig. 1. Diagrammatic representation of a cross-section showing how leftover oil can be removed from a subterranean rock formation by using water and carbon dioxide [4].

## Conclusion

The latest technologies employed in increasing oil production from depleted layers with poor permeability have opened new possibilities for extracting valuable resources from challenging reservoirs. Hydraulic fracturing, enhanced oil recovery techniques, nanotechnology applications, and advanced reservoir characterization and simulation tools have significantly improved production rates and overall recovery efficiency. By continuing to innovate and refine these technologies, the oil industry can unlock substantial reserves, enhance energy security, and meet the increasing global energy demands.

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# USING NANOTECHNOLOGY TO INCREASE OIL PRODUCTION

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**Abstract**: Nanotechnology has emerged as a promising field for enhancing oil production and improving recovery rates from reservoirs. By leveraging the unique properties of nanoscale materials, researchers and engineers are developing innovative solutions to overcome the challenges associated with conventional oil extraction methods. This report explores the applications of nanotechnology in the oil industry, highlighting its potential to boost production, increase ultimate recovery, and maximize the utilization of hydrocarbon resources. Key advancements, such as nanoparticle-based fluids, nanocatalysts, and nanosensors, are discussed, along with their implications for the future of oil production.

**Key words**: Nanotechnology, Oil production, Nanoparticle-based fluids, Nanocatalysts, Nanosensors.

## Introduction

The demand for oil continues to rise globally, necessitating the development of new technologies to maximize production from existing reservoirs. Nanotechnology, with its ability to manipulate and engineer materials at the nanoscale, has emerged as a groundbreaking solution for enhancing oil recovery and increasing production rates. By utilizing nanoparticles and nanoscale materials, researchers are revolutionizing the oil industry and addressing the challenges associated with conventional oil extraction methods.

## Results and discussion

One of the key applications of nanotechnology in oil production is the development of nanoparticle-based fluids. These fluids, consisting of nanoparticles suspended in carrier fluids, offer unique properties that can significantly improve oil recovery. Nanoparticles can alter the fluid's rheology, reducing viscosity and enhancing displacement efficiency. They can also modify wettability, allowing better contact with the reservoir rock and facilitating oil flow. Additionally, nanoparticles can plug pore throats, diverting fluid flow to previously untapped regions of the reservoir, thereby increasing recovery rates [1-3].

Nanocatalysts play a crucial role in improving oil production by enhancing the efficiency of chemical reactions within the reservoir. These catalysts, typically composed of metal nanoparticles, can accelerate reactions that facilitate oil recovery. For instance, they can promote the breakdown of heavy hydrocarbons into lighter fractions, making them easier to extract. Nanocatalysts also