

国内外油田提高采收率技术进展与展望

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Progress and prospects of enhanced oil recovery technologies at home and abroad

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摘要

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摘要 对国内外油田提高采收率技术发展作了概述,着重阐述了改善水驱、稠油热采、化学驱、气驱、微生物采油和物理法采油6个方面。目前,改善水驱、稠油热采、化学驱和气驱4类技术已进入矿场规模化应用,热采和气驱技术应用规模不断扩大,化学驱技术主要应用在中国,而微生物采油和物理法采油技术尚处于探索、试验阶段。综合国外经验和我国具体情况,指出目前提高采收率技术的攻关方向和发展趋势。研究认为,改善水驱技术通过层系细分重组和井网井型立体优化,建立合理、有效的注采系统,探索驱替剖面的均匀控制。稠油热采技术综合应用复杂结构井、蒸汽和各类助剂,改善稠油油藏开发效果。气驱技术应用规模有不断扩大的趋势,随着温室气体减排的要求,CO₂驱油埋存项目不断增加。化学驱技术向高温高盐油藏、大孔道油藏和聚合物驱后油藏发展。

关键词: [改善水驱](#) [化学驱](#) [稠油热采](#) [注气](#) [技术进展](#) [提高采收率](#)

Abstract: This paper summarizes the development of enhanced oil recovery(EOR)at home and abroad,focusing on improved waterflooding,heavy oil thermal recovery,chemical flooding,gas injection,microbial enhanced oil recovery and physical oil recovery.Nowadays,the first four technologies have been widely applied in oilfields,while the latter two technologies are still in researching and testing.Based on a thorough analysis of the foreign experiences and specific geologic conditions in China,this paper presents the focuses of future research and development tendency of EOR.For the improved waterflooding,the focuses are establishing a reasonable and effective injection-production system and realizing uniform control of displacement profile by strata subdivision and recombination,stereo optimization of well pattern and type.For the heavy oil thermal recovery,the key is to improve heavy oil reservoir development efficiency by using wells with complicated structure,steam and various additives.For the gas injection,the scale of its application is widening and CCS projects will increase gradually with greenhouse gas emissions cuts requirement.For the chemical flooding,the trend is toward application in reservoirs with high temperature and high salinity,reservoirs with high permeability channels and post polymer flooding reservoirs.

Keywords: [improved waterflooding](#) [chemical flooding](#) [heavy oil thermal recovery](#) [gas injection](#) [technology progress](#) [enhanced oil recovery](#)

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