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**Acoustic and Vibrational Enhanced Oil Recovery**

[George V. Chilingar](https://www.wiley.com/en-ie/search?pq=%7Crelevance%7Cauthor%3AGeorge+V.+Chilingar), [Kazem Majid Sadeghi](https://www.wiley.com/en-ie/search?pq=%7Crelevance%7Cauthor%3AKazem+Majid+Sadeghi), [Oleg Leonidovich Kuznetsov](https://www.wiley.com/en-ie/search?pq=%7Crelevance%7Cauthor%3AOleg+Leonidovich+Kuznetsov)

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**DESCRIPTION**

**ACOUSTIC AND VIBRATIONAL ENHANCED OIL RECOVERY**

**Oil and gas is still a major energy source all over the world, and techniques like these, which are more environmentally friendly and inexpensive than many previous development and production technologies, are important for making fossil fuels more sustainable and less hazardous to the environment.**

Based on research they did in the 1970s in Russia and the United States, the authors discovered that oil rate production increased noticeably several days after the occurrence of an earthquake when the epicenter of the earthquake was located in the vicinity of the oil producing field. The increase in oil flow remained higher for a considerable period of time, and it led to a decade-long study both in the Russia and the US, which gradually focused on the use of acoustic/vibrational energy for enhanced oil recovery after reservoirs waterflooded. In the 1980s, they noticed in soil remediation studies that sonic energy applied to soil increases the rate of hydrocarbon removal and decreases the percentage of residual hydrocarbons. In the past several decades, the use of various seismic vibration techniques have been used in various countries and have resulted in incremental oil production.

This outstanding new volume validates results of vibro-stimulation tests for enhanced oil recovery, using powerful surface-based vibro-seismic sources. It proves that the rate of displacement of oil by water increases and the percentage of nonrecoverable residual oil decreases if vibro-energy is applied to the porous medium containing oil.

**Audience:**

**Petroleum**Engineers, Chemical Engineers, Earthquake and Energy engineers, Environmental Engineers, Geotechnical Engineers, Mining and Geological Engineers, Sustainability Engineers, Physicists, Chemists, Geologists, and other professionals working in this field

**ABOUT THE AUTHOR**

**George V. Chilingar, PhD,** is Professor Emeritus of petroleum, civil and environmental engineering at the University of Southern California (USC). He received his Bachelor’s and Master’s Degrees in Petroleum Engineering, and PhD in Geology at the University of Southern California. Professor Chilingar is Academician, USC International Ambassador, Member of the Russian Academy of Sciences, founder and past President of the Russian Academy of Natural Sciences USA Branch, Honorary Professor of Gubkin University, Russia, and Honorary Consul of Honduras in Los Angeles, CA. In 2021, Professor Chilingar was given the Society of Petroleum Engineers (SPE) Honorary Membership award in Dubai for outstanding service to SPE and distinguished scientific and engineering achievements. The results of his investigation are presented in over 500 research articles and 73 books in the fields of petroleum and environmental engineering and petroleum geology.

**Kazem Majid Sadeghi, PhD,** has a Bachelor of Science in chemistry from the University of California, Santa Barbara (UCSB), a Master of Science in environmental engineering from the University of Southern California (USC), an Engineer Degree in Civil Engineering USC, and PhD in geography from UCSB. Professor Sadeghi has been researching and teaching for many years at UCSB and California State Polytechnic University, Pomona. He has over 30 years of civil and environmental engineering and consulting experience, including hazardous waste management, pollution prevention assessments, design of industrial wastewater pretreatment facilities and gas collection/treatment systems, treatment of carbonaceous materials, soil remediation, and enhanced oil recovery.

**Oleg Leonidovich Kuznetsov, Grand PhD in Engineering**, is a graduate from Moscow Geological-Prospecting Institute. Upon graduation he worked at the Institute of Geology and Mining of Fossil Fuels of the Academy of Sciences and All-Union Institute of Nuclear Geophysics and Geochemistry. He worked in the All-Russia Institute of Geosystem and is a professor at M.V. Lomonosov Moscow State University.  In addition, he is a professor at Dubna State University working on research development and teaching.  Professor Kuznetsov is President of Russia’s Academy of Natural Sciences. He is the author of a number of papers and books on applied geophysical technology and several monographs.

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