Book Review

Reviewed by M.R. Riazi

Email: mrriazi@gmail.com

Utah Oil Shale: Science, Technology and Policy Perspectives
by: Jennifer P. Spinti
Published 2016
by CRC/Taylor and Francis
6000 Broken Sound Parkway NW, Suite 300,
Boca Raton, FL, 33487, USA, 338pp
ISBN: 9781498721721

Total world oil shale reserves which mainly contain bituminous hydrocarbons (or kerogen) are estimated to be the equivalent of more than 5 trillion barrels of oil. Shale oil is unconventional since its production is more difficult and costly than the production of conventional oils. With current technology about 20% of these resources are recoverable and can play an important role in sustaining oil production, while production of conventional oil is in decline. The largest shale oil deposits are found in the USA, mainly in the States of Colorado, Utah and Wyoming. Most oil shale reserves are in the Green River Formation and under federally owned and managed lands. It is for these reasons that knowledge of the science, technology and policy regarding shale oil production in the USA is important.

A new book titled *Utah Oil Shale: Science, Technology and Policy Perspectives* has been recently published by Taylor and Francis/CRC press in 2017 and edited by Jennifer P. Spinti, Research Associate Professor of Chemical Engineering at the University of Utah. Professor Spinti has managed to bring together a list of authors who are leading Utah specialists in their respective fields and working as researchers at the University of Utah's Institute for Clean and Secure Energy (ICSE). In addition, collaborators from the Utah Geological Survey and Brigham Young University (BYU) are coauthors of several chapters. The book is a result of a decade of research on unconventional oil and especially on Utah's oil shale and oil sands at ICSE with funding from the US Department of Energy.

The book totals 337 pages, written in 12 chapters; there are many tables and figures which enhance understanding and help to make this an easy read. Units used in the book along with lists of figures, tables and acronyms are provided at the outset and at the end of the book a complete index is given making it easy to search and find various subjects. The first chapter is an introduction to oil shale, the State of Utah, shale reserves and research activities related to shale oil at the University of Utah over the last decade. It is followed by two chapters on legal and policy considerations involving oil shale, land planning and management. Chapter 4 represents a basin-scale evolution of an oil shale resource in the State of Utah. Chapters 5 through to 9 discuss a series of experiments that were conducted on oil shale samples from oil shale cores from the upper Green River

Formation in the Unita Basin. The experiments included sample characterisation, pyrolysis and analysis of pyrolysis products, porosity and permeability evaluation and measurement of geomechanical properties under representatives in situ conditions. Chapter 10 incorporates data from previous chapters to discuss simulation scenarios from the effect of well arrangement on energy ratio in the Unita Basin. Chapter 11 discusses the question of costs for various heating scenarios and, finally, chapter 12 analyses environmental issues and ozone precursor emissions and their impact on air quality and energy policy.

In summary, the book could be a useful resource to professionals, researchers and policy makers involved in oil shale and in the production of oil from such unconventional sources to meet future energy demands.