

EDITOR'S PAGE

OIL SHALE – CHALLENGES AND OPPORTUNITIES

There are those in the US and elsewhere who sometimes use an old joke in connection with oil shale. It goes something like “*Oil shale is the fuel of the future – and always will be.*” This lack of confidence in the usefulness of this potentially large fossil energy resource has only been amplified by global warming concerns related to use of high carbon to hydrogen ratio fossil fuels. And yet, as the readers of this journal are well aware, oil shale is a viable contributor to the global energy mix, as this journal’s home country of Estonia amply demonstrates.



It is also fascinating to see how oil shale has come and gone in prominence in other places, such as the historical review of shale oil usage in Scotland, presented in this volume, outlines. There are lessons to be learned from experience of long ago, just as there are lessons to be learned from the latest research results.

The fact is, it would be quite irresponsible to ignore this large energy resource entirely, and we would do so at our own peril. There is no doubt that as time goes by, and the economics of energy production using different sources evolves, some sources will be more favored and others less. Likewise, there is no doubt that the technologies called upon for utilizing resources such as oil shale will also change. Again, taking the example of Estonia, there is the competition between use of the resource for direct-firing for power production as opposed to use for oil production. Others might face similar or different choices in how to use the resource. In the future, this balance can be affected by market forces or technology trends not yet apparent to us.

One thing is certain, though. There will be increasingly important environmental and byproduct utilization drivers determining which technologies are viable and which not. Many of these have to do with the mineral portion of the oil shale. We will need to understand more completely the mineral matter in the raw shale and the processes that it undergoes, regardless of the type of conversion technology employed. In this issue are papers concerned with oil shale combustion ash, trace elements in mineral matter of oil shale and the use of mining spoils. There already exists a large literature concerning the unique characteristics of oil shale ash, and how this influences technology choices in combustion. While work on ash has perhaps not been considered as

particularly glamorous in worldwide fundamental science circles, it is undeniably a critical component to assuring viability of this resource in the future.

Of course, it remains the fossil organic matter that is the main attraction to oil shale. To say that there remains much to be learned about this organic matter is understatement. Just as has been the case for coal, oil shale technology choices will in the future be increasingly guided by better and more fundamental understanding of the organic matter and its conversion behavior. We still see a need for research on the most basic of thermal oil shale conversion processes, examples of which are again to be found in this issue. Rather than this being an example of earlier science having been poorly performed, the continued offering of papers dealing with subjects as fundamental as pyrolysis is a tribute to the complexity of the processes and materials involved. There are those who have suggested that, just as fundamental study of the organic matter of coal was enhanced by the creation of a standard sample bank from which many researchers around the world could draw, this is a something that if put into place for oil shale could significantly help in increasing the pace of our understanding of that material as well. Existence of a commonly used sample set would help us better compare the many and disparate results that arrive from laboratories throughout the world.

It is easy for the naysayers in the first paragraph of this editorial to scoff at oil shale and its prospects for contribution to the world energy economy. It is increasingly evident, though, that we are entering a period in which different circumstances in different parts of the world will dictate very different choices will be made. Oil shale will contribute in many ways, even if not in all possible ways. It is up to the readers and authors of this journal to ensure that enough is known about how to use it in the cleanest and most efficient way in widely varying circumstances. This can only come from sharing well-performed science, which we hope will continue to grace the pages of this journal for years to come.

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