

## AHEAD OF OUR TIME

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It is a pleasure to welcome you to the International Conference on Oil Shale and Shale Oil on behalf of the 21st Oil Shale Symposium of the Colorado School of Mines. The number of countries represented in the presentation of papers is an indication of the continuing interest in the development of synthetic fuels from oil shale nations around the world. I have great confidence and expectations that the sharing of knowledge and interests at this meeting will result in a greater future for oil shale development. I wish to compliment my colleagues from the Peoples Republic of China on their foresight and express my appreciation for their invitation to make this Conference a joint one with the Colorado School of Mines 21st Oil Shale Symposium. This conference creates a unique opportunity for oil shale researchers from all parts of the world to become aware of the work being done by their colleagues in other countries. It appears we all share the concern that research is progressing too slowly and that we will not be ready to cope with the next world energy crisis which is an ever present threat.

In 1964 a similar concern to me and my colleagues at the Colorado School of Mines and the Colorado School of Mines Research Institute resulted in the first of the annual Oil Shale Symposia. We felt there was a need for those who shared our concerns and interests in oil shale research to have a forum where ideas and results could be exchanged so work could be carried out more quickly and more efficiently with a minimum of duplication. It was also believed that sharing our knowledge would be conducive to new ideas that would be beneficial to all. I believe the same is true with the conference we are opening today.

Although 24 years have elapsed, 1988 records the 21st Oil Shale Symposium because interest in, and funding for,

oil shale research has been on an "on again, off again" basis as the perceived need for alternative sources of liquid fuels fluctuated with political situations and crises, particularly in the Middle East. In the 1960's, there was a predicted shortage of petroleum because the major oil producing countries of that time had reached their production peak and the rate of oil production was beginning to decline. Both private and government funds were readily available to support research and great strides were made in developing new techniques to lower the cost of shale oil production. However, new crude oil discoveries were then made in the Middle East and the shortage was no longer a concern. Research and development funds became difficult to obtain and interest in shale declined. Insufficient research was being performed to provide enough quality papers to hold a symposium annually, so the meetings were held on alternate years from 1968 to 1973.

Again a change occurred in 1973 as the embargo of crude oils imposed by the OPEC countries caused critical shortages in the industrial nations and the resulting surge in energy prices impacted the remainder of the world. Once again government leaders reacted by greatly increasing funding for research and development in oil shale and other alternate fuels. In 1978 the jump in crude oil prices further increased the oil shale research and development activity and, in the United States alone, there were at least four processes being championed for commercial development that were believed to be capable of producing shale oil at prices competitive with crude oil. But again in 1986, the precipitate drop in crude oil prices caused the cessation of activity in these operations with one exception (UNOCAL).

Historically, the desire to commercialize the production of shale oils from oil shales has been one of alternate periods of disinterest followed by periods of almost frantic research and development. It appears that unless there is an emergency creating an incentive for developing alternative sources of liquid fuels, there is no interest in spending funds to promote the knowledge required to produce synthetic fuels from oil shales economically, competitively, and environmentally safe.

At present some predictions of world energy requirements say that in as few as five years there will be a shortage of available crude oil while others are looking at

ten to 15 years. Almost all believe that by early in the 21st century, crude oil availability and prices will make synthetic liquid fuels competitive with those of petroleum. Again, it is essential that we be sufficiently knowledgeable of processes to produce liquid fuels from oil shale so that a viable industry can be implemented effectively and quickly. In the past, opportunities to establish a competitive production of shale oil have been lost because we were not prepared. Today, under special circumstances, a few commercial sized plants are operating to produce liquid fuels from oil shales but these are unique in their concept and are not cost competitive. We are still far from being prepared for a world fuel crisis.

Once again we are on the "down" side of the scale as the low crude oil prices current today have resulted in decreases in the levels of research funding and comparable lower levels of research activities in the fields of oil shale and shale oils. Researchers still active in these fields are often driven by the knowledge that the world will need energy sources other than petroleum to meet the requirements of the developed and developing countries in the future. It is imperative that research be continued in the area of synthetic fuels even though present demands on the national budgets of the world are focused on near-term needs rather than those of the future.

It is our hope that this conference will bring forth new ideas, new goals, and new incentives in a spirit of global cooperation that will prove those of us spearheading a viable oil shale industry definitely have been ahead of our time in our efforts to prepare for the future.

