6.1 **Simulation of a rubblized oil shale surface pyrolysis process**

Jacob Bauman, Milind Deo

University of Utah, Salt Lake City, United States

Challenges with oil shale processing include efficient heat transfer, adequate product yield, and successful waste management. Modified in-situ processing strategies have been designed to address these challenges. In this study, a process where oil shale is rubblized and pyrolyzed in an enclosed shell at the surface is explored. The major processes involved are heat transfer from heaters to the oil shale rock, generation of fluids via kerogen transformations to products, fluid flow from within rocks to the rock surfaces, and fluid flow from rock surfaces through the rock bed toward producers. The system was discretized with a finite difference commercial simulator with interspersed high porosity/high permeability blocks representing gaps between rubblized rocks, and low porosity/low permeability blocks representing the oil shale rocks. It was found that liquids will flow to the bottom of the shell due to gravity. Pressure management is key for successful production in these simulations. Some pressure is generated due to heating, but application of additional external pressure to drive the flow of products through the system improves production.