

## **Upgrading Estonian shale oil bituminous fractions**

Hans Luik, Lea Luik, Julia Krasulina, Hella Riisalu

*Tallinn University of Technology, Estonia*

Estonian shale oil tail and residuum fractions as well as thermal bitumen obtained as a result of Kukersite thermal dissolution were submitted to catalytic hydrocracking in a batch autoclave. The effect of temperature, time, hydrogen pressure and catalyst type on the refined oil yield and chemical composition was investigated. Modifications occurring in the composition of functional groups and group composition of oil were investigated. The content of heteroatomic compounds was decreased significantly as a result of hydrodeoxygenation, hydrodesulfuration and hydrodenitrogenation reactions. The hydrocarbon content was also increased, and the boiling range was corrected. It was demonstrated that differing hydrocracking conditions should be worked out to maximize upgrading of liquids from pyrolysis and thermal dissolution processes.