

### 초중질 원유의 경질화 공정을 위한 분산형 철촉매 효과 연구

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The extra-heavy oil fractions upgrading process, which consists of a rapid thermal pyrolyzer (RTP) of extra-heavy oil and gasifier/combustor of RTP residue to produce syngas as well as supply heat to the pyrolyzer are developed in KIER (Korea Institute of Energy Research). The conventional RTP is operated without catalyst since it is hard to find a suitable catalyst which can be used for high metal content in the oil. In this study, the iron-dispersive catalyst is used to increase reaction rate in the RTP process. The thermo-balance reactor and batch-type pyrolyser is used to find the effect of catalyst under an isothermal condition and non-isothermal condition. The catalyst loading is varied from 10 ppm to 2000 ppm mixed with raw bitumen as a extra-heavy oil. At lower temperature of 550 °C, the pyrolysis rate increases with increasing catalyst loading. On the other hand, the effect of catalyst loading disappears over 600 °C. The gas release characteristics of raw and catalyzed bitumen (1000 ppm) are similar, the methane released earlier than that of raw bitumen due to catalyst effect.