A Study on Pyrolysis Characterization of Vacuum Residue Using Iron Catalyst Using Thermogravimetric Analyzer

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Vacuum residue is acquired from the bottom stage of the vacuum distillation unit which is located on the latter part of refinery process. After crude oil is passed through the oil refinery process, from 10 to 30 weight percent of crude oil is left as the vacuum residue. Vacuum residue has the poor fuel-property because of the high boiling point (over 758 K), high-viscosity, high contents of residual carbon, metals, and brimstone. Therefore, many research groups have an interest in developing various chemical process for getting the high-value added chemicals or fuels from vacuum residue, such as EUREKA process, delayed coking, rapid thermal pyrolysis. But, the developed processes have problems, which are high operating temperature and high ratio of gas and coke to product. For solving these problems, new pyrolysis process using catalyst have been studied. In this study, pyrolysis behavior of vacuum residue using iron catalysts is studied using a thermogravimetric analyzer (TGA).