

## Removal of naphthenic acids in heavy crude oils by decarboxylation reaction

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The efficient deacidification method of naphthenic acids (NA) in crude oils has been attractive for the utilization of lower-grade crude oils in the petroleum refinery processes. The presence of NA in crude oils has been known for the severe corrosion problems in the refinery processes including equipments and storages. Owing to the recent increasing demand of the lower-grade crude oils, which have a higher total acid number (acidity), the catalytic decarboxylation reaction to remove the acid components in the crude oils have been largely investigated. The active sites for the decarboxylation of NA are known to be Bronsted and Lewis sites. In the present study, the conversion of benzoic acid (one of the NA) was investigated by using the graphitic C<sub>3</sub>N<sub>4</sub>-based solid acid catalyst in a batch reactor. The graphitic C<sub>3</sub>N<sub>4</sub> modified with Al<sub>2</sub>O<sub>3</sub> showed a different activity according to the concentration of Al<sub>2</sub>O<sub>3</sub> due to the different total acidity. The surface properties of the modified g-C<sub>3</sub>N<sub>4</sub> were further characterized using XRD, NH<sub>3</sub>-TPD, BET and Py-IR analyses.