

Synthesis of High Stability Nanosized Pt Loaded MgAl₂O₄ Catalyst for *n*-decane Cracking with Enhanced Activity and Durability

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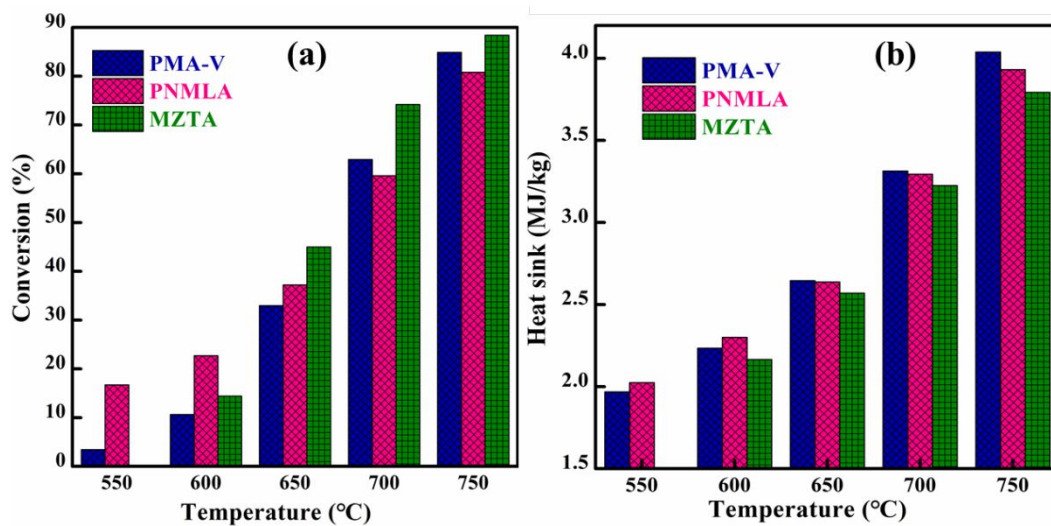
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Supporting Material

Figure S1 *n*-decane conversion (a) and heat sink (b) over the PMA-V catalyst in this work, PNMLA catalyst in ref.27, MZTA catalyst in ref.24.



PNMLA = Pt-Ni/MoO₃/La-Al₂O₃; MZTA = MoO₃/ZrO₂-TiO₂-Al₂O₃

Figure S2 Thermal stability over the PMA-V catalyst in this work and PNMLA catalyst

in ref.27

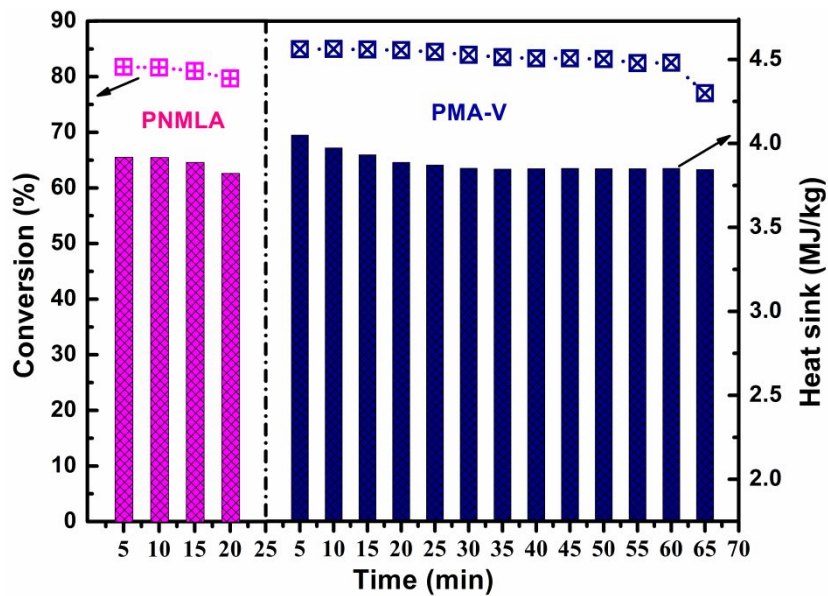
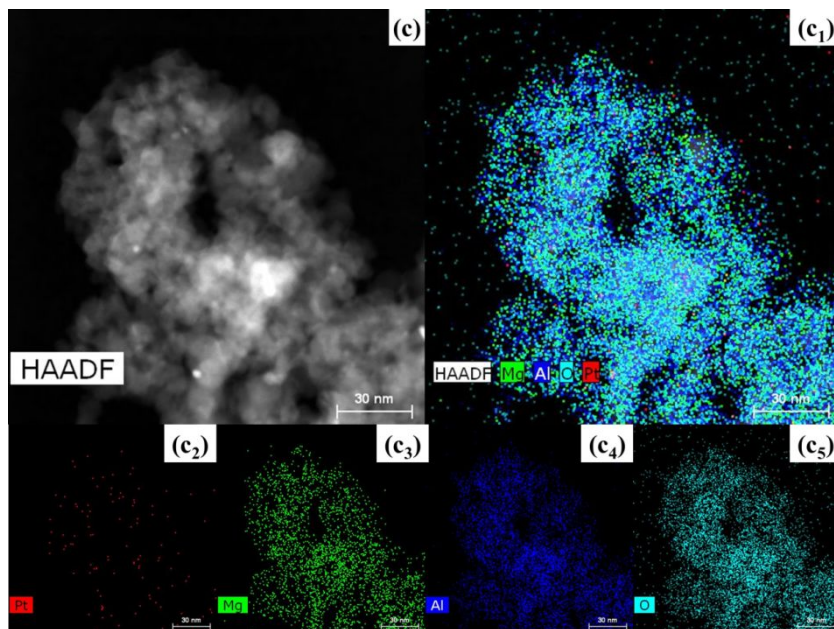


Figure S3 HAADF-TEM EDS elemental mapping of PMA-V catalyst, (c) another section different from (b) in the manuscript of PMA-V micrographs



As shown in Figure S3, Pt species are uniformly dispersed on the MA surface, very few Pt species are sintered calcination at 800 °C.

Table S1 The amount of carbon deposition over the PMA-V catalyst in this work, PNMLA catalyst in ref.27, MZTA catalyst in ref.24.

| Catalysts | Carbon deposition | | |
|-----------|-------------------|--------------------|---------------------------|
| | mg | mg/cm ² | mg/(cm ² •min) |
| PMA-V | 169.2 (93min) | 53.87 | 0.58 |
| PNMLA | 95.4 (28min) | 19.08 | 0.68 |
| MZTA | 85.4 (28min) | 17.07 | 0.61 |

Obviously, the rate of coke formation over PMA-V catalysts is lower than that in PNMLA and MZTA catalysts ^{24,27}.

References

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- (27) Zhang, J.; Chen, T.; Yao, P.; Jiao, Y.; Wang, J. L.; Chen, Y. Q.; Zhu, Q.; Li, X. Y. Catalytic Cracking of n-Decane over Monometallic and Bimetallic Pt-Ni/MoO₃/La-Al₂O₃ Catalysts: Correlations of Surface Properties and Catalytic behaviors. *Ind. Eng. Chem. Res.* **2019**, *58*, 1823.