

The NM segregation and retention by deposition order : Influence on the formation of cobalt micro-structure for FTS

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Cobalt-based catalysts have been preferred for FTS. And the nature of support materials influenced the dispersion, particle size and reducibility, all of which impacted the catalytic activity. Alumina has been used as one of the supports for LTFT. But its reducibility is low due to the presence of irreducible species. In order to enhance the reducibility of catalysts, The Noble Metal (NM) were introduced as promoters. But the role and the composition of the NM-Co and deposition order of NM are still on the debates, although general conclusions that the outcome depended on the relative Co and NM loaded. That the preparation conditions strongly affected the Co microstructure (hcp and fcc) was well known. The objective of this study is to find effect of NM deposition order of which impact on the formation over alumina under variation of calcination atmosphere. It was found that the co-slurry impregnation method enhanced the retention of NM. Interestingly, the deposition of Ru via subsequent-impregnation method facilitates to form hcp structure, yet it has lower activity due to the segregated forms.