

Accepted Manuscript

Title: Development of Compositied Rare-Earth Promoted Cobalt-Based Fischer-Tropsch Synthesis Catalysts with High Activity and Selectivity

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PII: S0926-860X(15)30093-4
DOI: <http://dx.doi.org/doi:10.1016/j.apcata.2015.07.041>
Reference: APCATA 15491

To appear in: *Applied Catalysis A: General*

Received date: 21-5-2015
Revised date: 29-7-2015
Accepted date: 29-7-2015

Please cite this article as: Leilei He, BotaoTeng, Yulong Zhang, Maohong Fan, Development of Compositied Rare-Earth Promoted Cobalt-Based Fischer-Tropsch Synthesis Catalysts with High Activity and Selectivity, Applied Catalysis A, General <http://dx.doi.org/10.1016/j.apcata.2015.07.041>

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1 **Development of Compositd Rare-EarthPromotedCobalt-Based Fischer-Tropsch Synthesis**
2 **Catalysts with High Activity and Selectivity**

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9 Graphical abstract

10 **Highlights:**

- 11 • Lanthanum and cerium with different molar ratio were used as promoters for cobalt based
12 catalyst for Fisher-Tropsch synthesis.
- 13 • Compositd La-Cepromoted catalysts can promotethe performance of Co catalyst on CO
14 conversion.
- 15 • La-Ce promoted catalystscan reduce the yields of methane and light gas phase
16 hydrocarbons (C₂ - C₄).
- 17 • The selectivity of diesel fraction (C₁₂-C₁₈) was enhanced significantly when optimal
18 molar ratio ofLa-Cepromoters was used.

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22 **Abstract**

23 The objective of this research is to find an optimalratio of rareearthelements (RE), lanthanum
24 (La) and cerium (Ce),as promoters of Co-based Fischer-Tropsch synthesis (FTS) catalysts to

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