

Hydrogen Spillover Effects On Pt-Rh Modified Co-Clay Catalysts For Heavy Oil Upgrading

Al-Saleh, MA; Hossain, MM; Shalabi, MA; Kimura, T; Inui, T

ELSEVIER SCIENCE BV, APPLIED CATALYSIS A-GENERAL; pp: 453-459; Vol: 253

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

Hydrogen spillover effects on noble metal-promoted Co/HPS (high porous saponite) catalysts have been investigated by temperature-programmed reduction (TPR) studies and batch autoclave reactor trials. Pt and Rh noble metals were used to introduce hydrogen spillover on Co/HPS. TPR studies showed that Pt-Rh combination has more significant effects on the reducibility of Co species on HPS catalysts than the unpromoted and single noble metal (Pt, Rh individually)-promoted catalysts. The Pt-Rh combination shifts the TPR peaks to lower temperatures. Two Pt-Rh-promoted catalysts were evaluated in batch autoclave reactor (at 400 degreesC and 140 kg/cm²) Using vacuum gas oil (VGO) as the feedstock. Pt-Rh-promoted catalysts showed higher activity for both hydrocracking and hydrodesulfurization of the heavy feed than the unpromoted Co/HPS catalyst. (C) 2003 Elsevier B.V. All rights reserved.

References:

1. ALI MA, 2002, APPL CATAL A-GEN, V277, P63
2. ALI SA, 1998, SCI TECHNOL CATAL, V127, P407
3. ARAI M, 1996, J CATAL, V161, P704
4. CHEN SY, 1993, STUD SURF SCI CATAL, V77, P131
5. DELEON SG, 1993, STUD SURF SCI CATAL, V77, P345
6. FUJIMOTO K, 1999, HYDROTREATMENT HYDRO
7. HAYASHI E, 1999, APPL CATAL A-GEN, V179, P203
8. HURST NW, 1982, CATAL REV SCI ENG, V24, P233
9. INUI T, 1993, STUD SURF SCI CATAL, V77, P17
10. INUI T, 1999, CATAL TODAY, V51, P361

© Copyright: King Fahd University of Petroleum & Minerals;
<http://www.kfupm.edu.sa>

11. KIMURA T, 2000, P 220 ACS NAT M WASH
12. PARERA JM, 1983, STUDIES SURFACE SCI, V17, P101
13. SCHANKE D, 1995, J CATAL, V156, P85
14. STEINBERG KH, 1989, P 2 INT C SPILL U LE, P150
15. YANG MG, 1997, STUD SURF SCI CATAL, V112, P221
16. ZHANG AH, 1997, STUD SURF SCI CATAL, V112, P392

For pre-prints please write to: abstracts@kfupm.edu.sa