SUPPORTING INFORMATION

Co-promoted MoO$_3$ Nanoclusters for Hydrodesulfurization

_Rupesh Singh$^1$, Deepak Kunzru$^{1,a}$*, Sri Sivakumar$^{1,2,b}$*

$^1$Department of Chemical Engineering, Indian Institute of Technology Kanpur, Kanpur- 208016 (UP), India

$^2$Material Science Programme, DST Thematic Unit of Excellence on Soft Nanofabrication, Centre for Environmental Science & Engineering, Indian Institute of Technology Kanpur, Kanpur- 208016 (UP), India.

* Corresponding author. Tel.: +91 512 2597193; fax: +91 512 2590104
E-mail address: d kunzru@iitk.ac.in

** Corresponding author. Tel.: +91 512 2597697; fax: +91 512 2590104
E-mail address: srisiva@iitk.ac.in

**Fig. S1** Schematic diagram of the experimental set-up.
**Fig. S2** FT-IR spectra of Co-promoted MoO$_3$ nanoclusters.
Fig. S3 MALDI-TOF mass spectra of unsupported Co-promoted MoO$_3$ nanoclusters showing Co$_2$Mo$_6$O$_{20}$ cluster formation.
Fig. S4 TGA analysis of unsupported Co-promoted MoO$_3$ nanoclusters.
Fig. S5 XRD analysis of unsupported CoMo nanoclusters (uncalcined)
Fig. S6 XRD analysis of unsupported CoMo calcined nanoparticles
Fig. S7 XRD analysis of calcined Co/γ-Al₂O₃ (∗: γ-Al₂O₃)
Fig. S8 TPR analysis of calcined Co/Al₂O₃
Fig. S9 SEM-EDX images of CoMo 2 catalyst
Fig. S10 Stability test for CoMo2 catalyst (supported on γ-Al₂O₃) under HDS reaction conditions (T=563 K, amount of catalyst=150 mg, W/Fₘ₀ = 2.17 x 10² (kg cat.h/kmol DBT)). Effect of time on a) HDS activity and b) Product selectivity BP CoMo 2(●) and CHB CoMo2 (○).
Fig. S11 TEM image of spent CoMo 2.
Fig. S12 Raman spectra of CoMo catalyst.