

Supplementary Materials: Catalyst/Feedstock Ratio Effect on FCC Using Different Catalysts Samples

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Appendix A- BET analysis for CAT-C

Figure S1 reports the N₂ adsorption on CAT-C (free of coke), as well as CAT-C after the run is completed. This analysis includes runs at different C/Os.

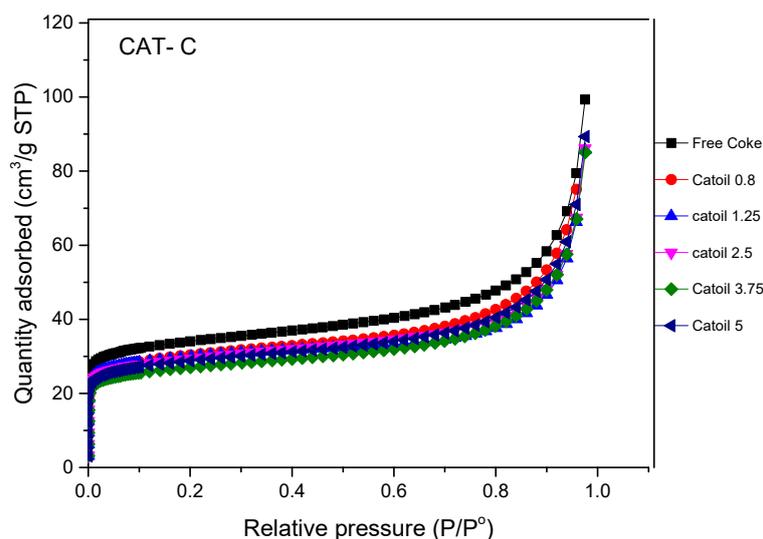


Figure S1. BET-Nitrogen Adsorption Plot. N₂ adsorption-desorption isotherms obtained from different samples of CAT-C, after runs at 550 °C and a 7 s contact time.

Figure S2 and Table S1 report the micropore volume for the regenerated CAT-C (free of coke) and the micropore volume for CAT-C after a 7 s and 550 °C run at various C/Os. One can notice the influence of the C/O ratio on the micropores volume while using CAT-C.

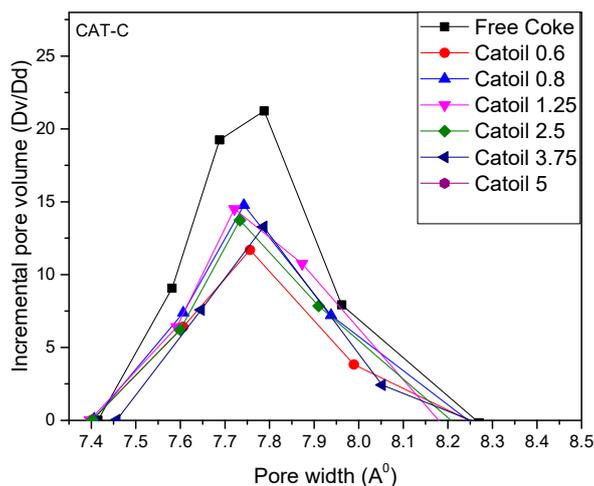


Figure S2. Differential Pore Volume (dV/dD) as a Function of the Pore Diameter (D) using the N₂-Adsorption Isotherms. (■) CAT-C free of coke; (●) CAT-C at C/O = 0.6 g/g; (▲) CAT-C at C/O = 0.8 g/g; (▼) CAT-C at C/O = 1.25 g/g; (◆) CAT-C at C/O = 2.5 g/g; (◄) CAT-C at C/O = 3.75 g/g; (◐) CAT-C at C/O = 5 g/g; All samples were analyzed following catalytic cracking runs at 550 °C and 7 s.

Table S1. Specific Surface Areas [SSA] (m^2/g) and Pore Volumes [PV] (cm^3/g). Mesopore Volumes (cm^3/g) for CAT-B are determined following catalytic cracking runs at $550\text{ }^\circ\text{C}$ and 7 s, using different C/O ratios. SD on repeats: $\pm 3\text{ m}^2/\text{g}$.

CAT-C Catalyst Sample						
	Free Coke	C/O=0.6	C/O=0.8	C/O=1.25	C/O=3.75	C/O=5
BET (SSA) m ² /g	118.5	97.8	91.9	90.2	86	92.9
PoreVolume (PV) cm ³ /g	0.196	0.136	0.137	0.135	0.128	0.131
Mesopores Volume, cm ³ /g	0.142	0.0898	0.0935	0.0930	0.0868	0.0870
Micropores Volume, cm ³ /g	0.0540	0.0463	0.0439	0.0426	0.0412	0.0440

Appendix B. Product Selectivity

Figure S3 reports for Cat-C at $550\text{ }^\circ\text{C}$, and 7s the Catoil (C/O) ratio effect on various catalytic cracking products as a function of the 1, 3, 5-TIPB conversion. One can observe a similar trend to the one found for CAT-B, and CAT-A (refer to reference 39).

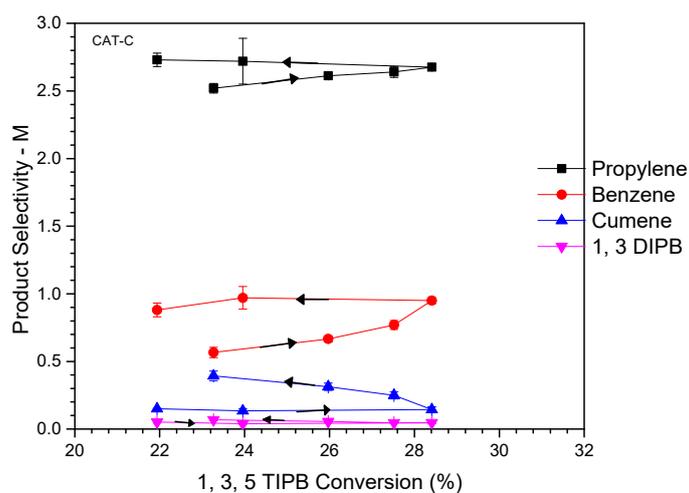


Figure S3. Effect of C/O on the Product Selectivity-M Using TIPB on the Catalyst CAT-C. Run Conditions: $550\text{ }^\circ\text{C}$ and 7 s, respectively. Notes: a) Direction of the arrows represent an increasing C/O ratio, b) Reported data and standard deviations (vertical bars) represent average values for 4–7 repeat runs.