

Supplementary material for:

Hydrotreating of guaiacol: A comparative study of Red Mud-supported nickel and commercial Ni/SiO₂-Al₂O₃ catalysts

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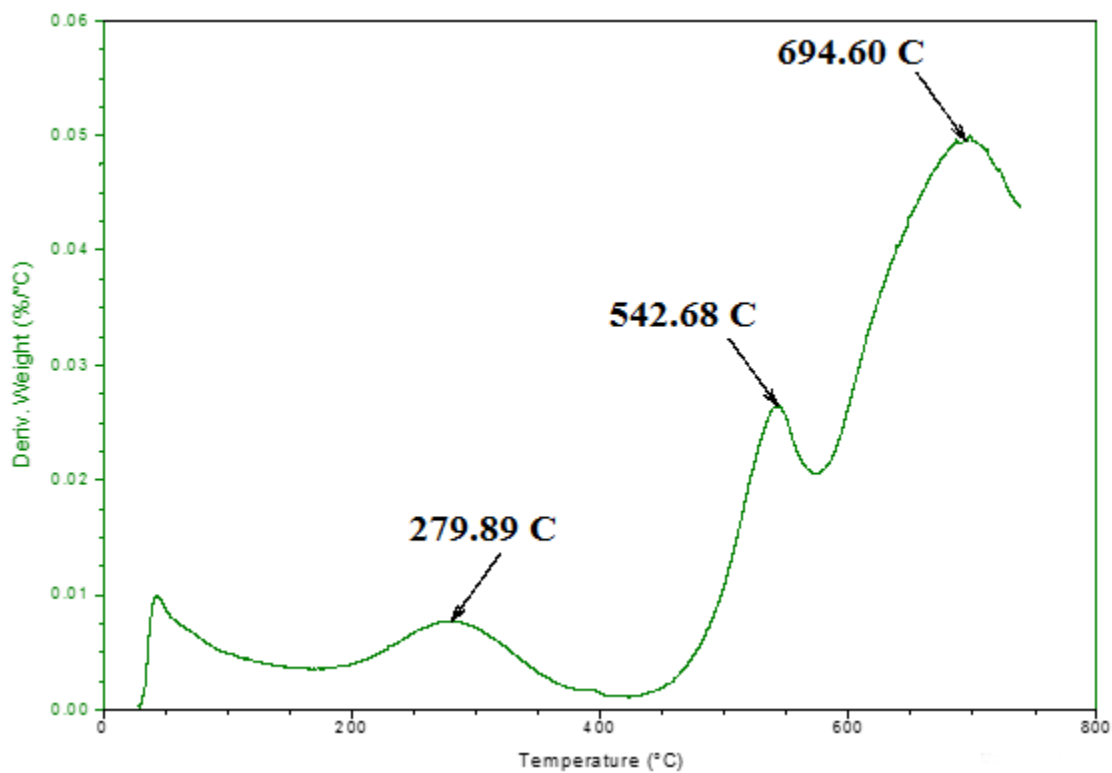


Fig. S1: TPR profile of Red Mud

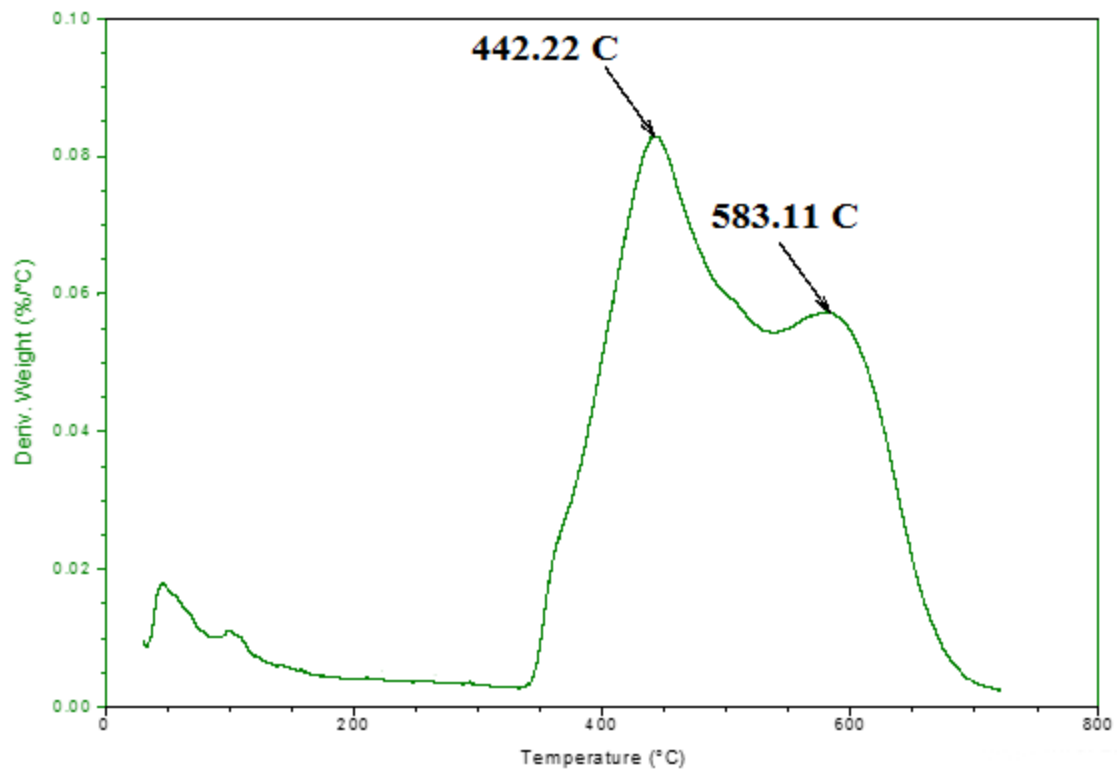


Fig. S2: TPR profile of Ni/RM catalyst.

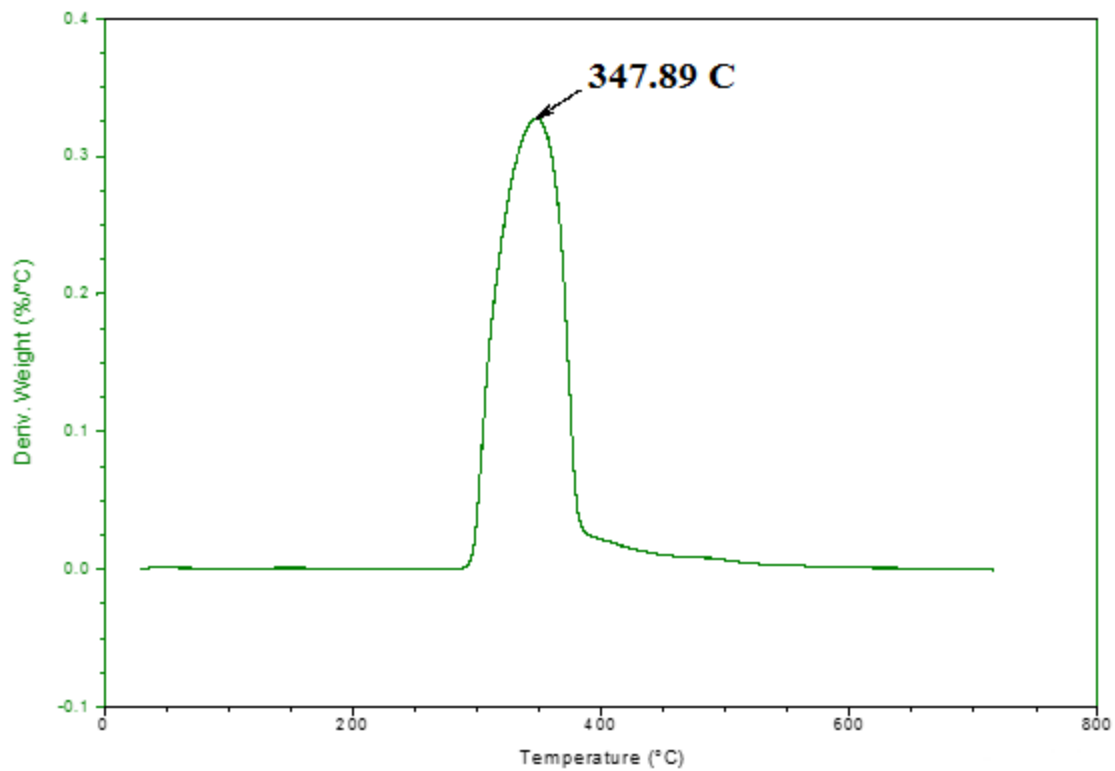


Fig. S3: TPR profile of nickel oxide.

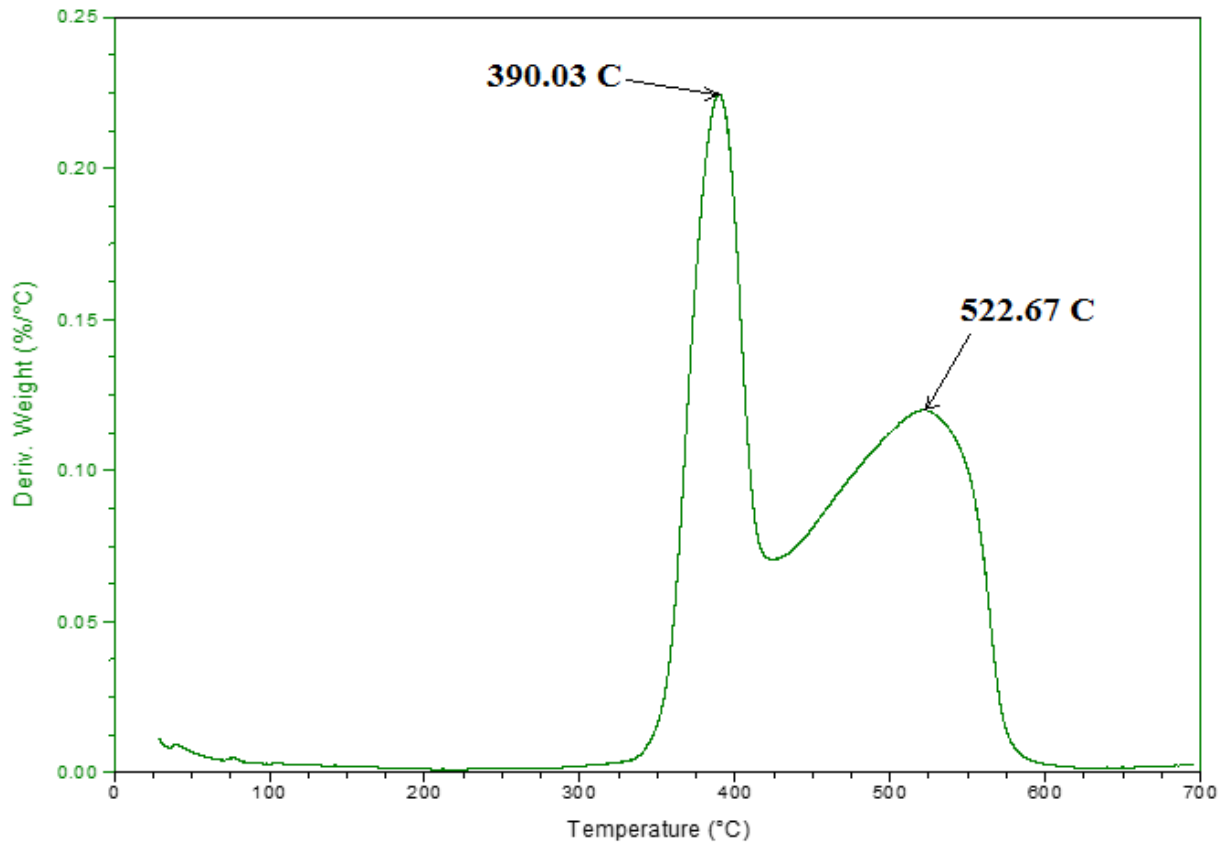


Fig. S4: TPR profile of NiO/Fe₂O₃.

Table S1: Effect of RM support on guaiacol HDO (the reaction temperature and H₂ initial pressure were 400 °C and 900 psi respectively).

Conv. (%)	H ₂ Consumption (mol H ₂ /kg guaiacol)	Yield (wt. %)				
		Organic	Aqueous	Gas	Coke	
2.7	0.03	75.4	0	4.7	18.3	
Liquid product analysis (wt. %)						
		Guaiacol	Benzene	Phenol	Anisole	Others
		96.3	1.4	1.2	1.1	0
Gas product analysis (mol %)						
		CO	CO ₂	CH ₄	C ₂ -C ₅	
		46.3	33.1	19.7	0	

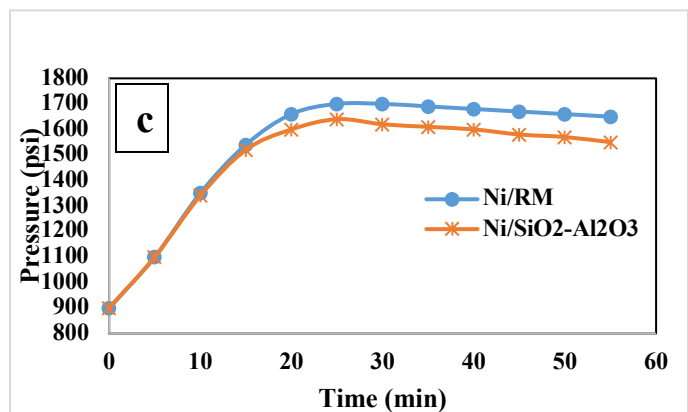
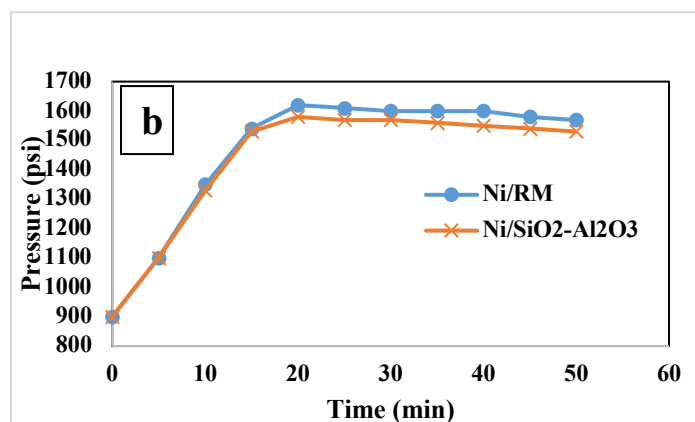
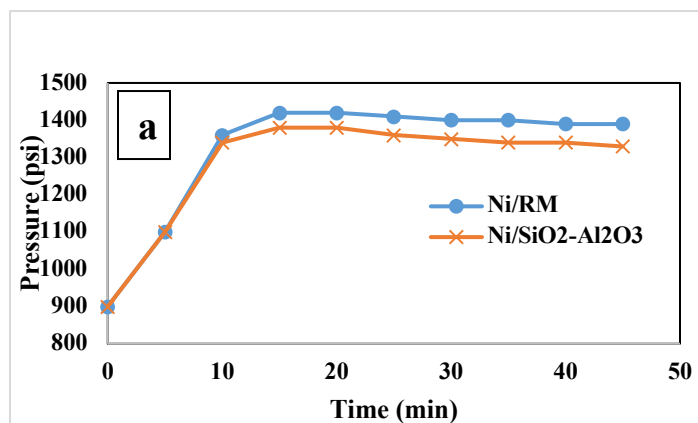


Fig S5: Pressure change during HDO of guaiacol at reaction temperatures of a) 300 °C, b) 350 °C, and c) 400 °C

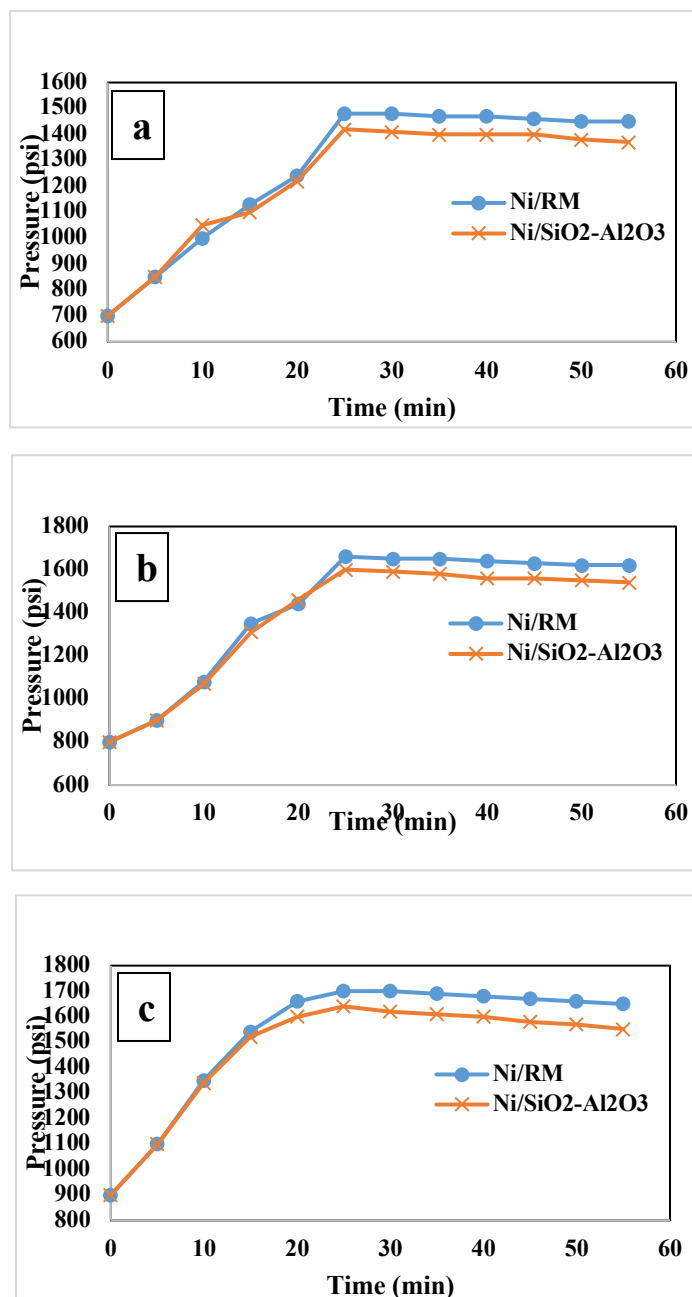


Fig S6: Pressure change during HDO of guaiacol at initial H₂ pressures of a) 4.83 MPa (700 psi), b) 5.52 MPa (800 psi), and c) 6.21 MPa (900 psi).