

Nanostructured carbon material effect on the synthesis of carbon-supported molybdenum carbide catalysts for guaiacol hydrodeoxygenation

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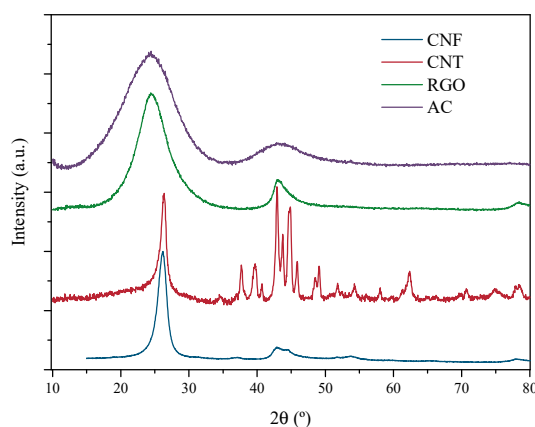


Figure S1. XRD patterns of supports after their corresponding purification and functionalization treatments.

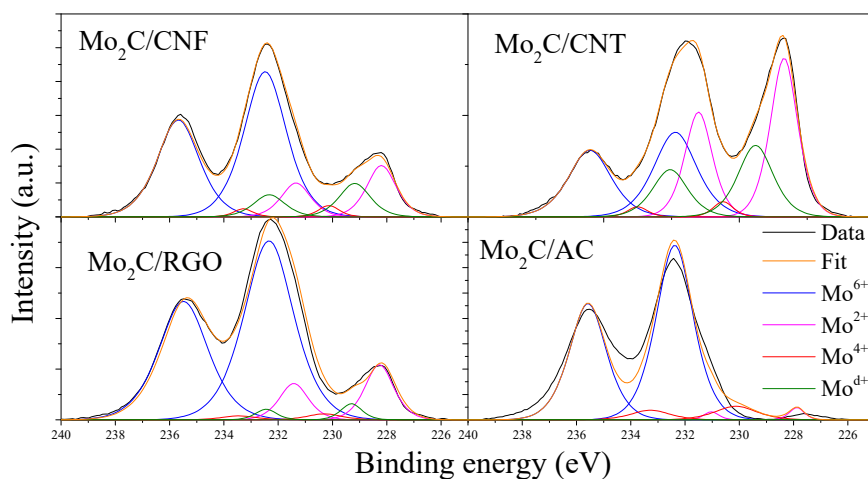


Figure S2. Mo 3d deconvolution of the Mo₂C/NMC catalysts.

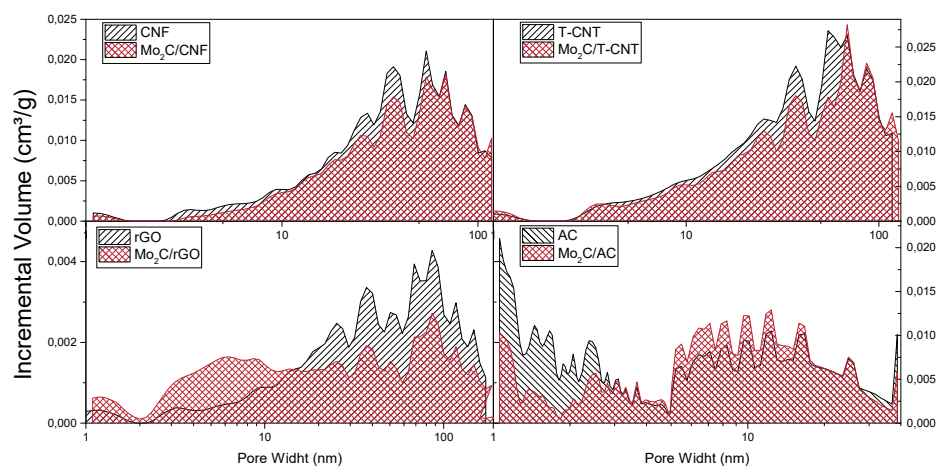


Figure S3. DFT Pore size distributions of catalysts and supports measured by N₂ physisorption.

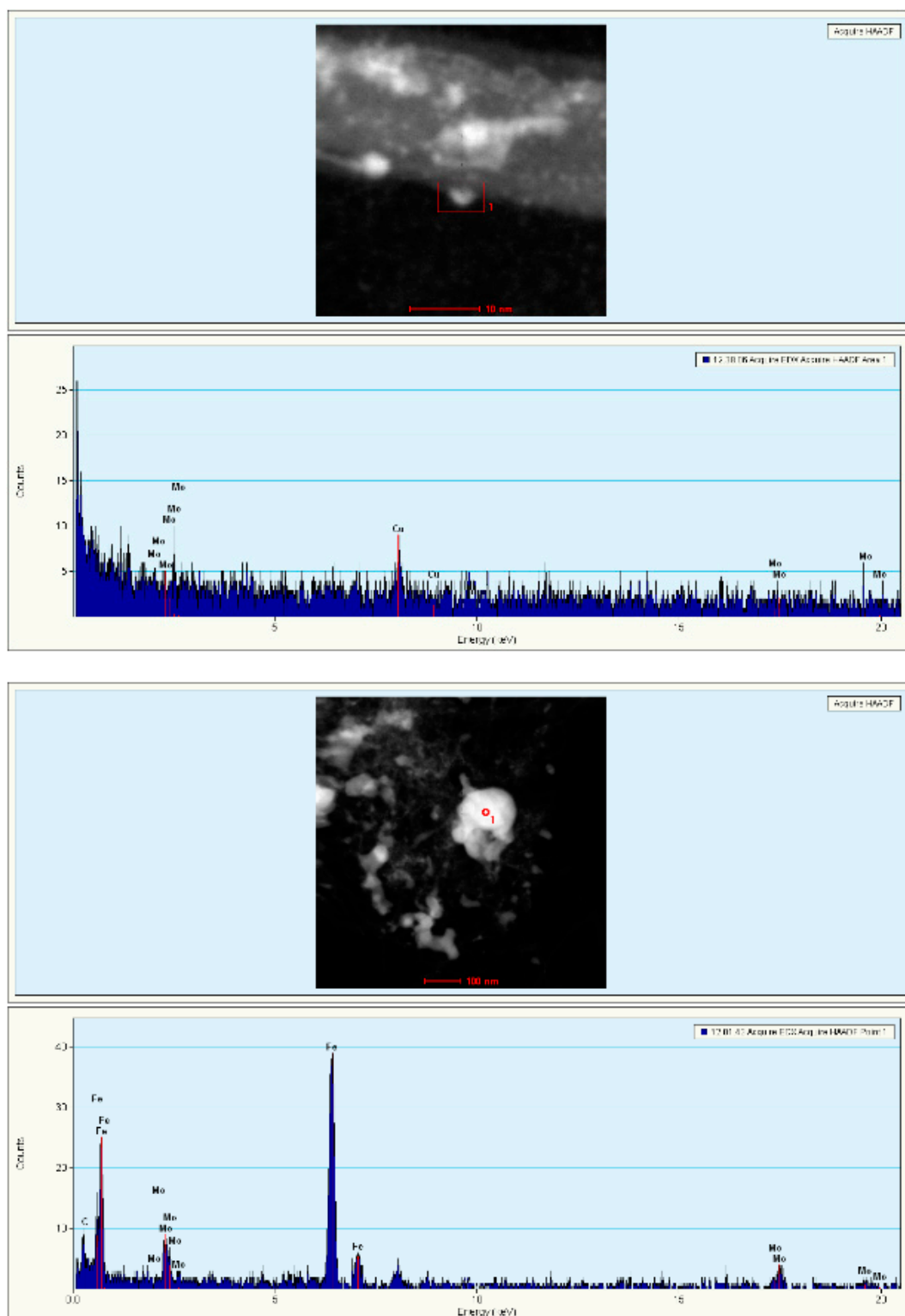


Figure S4. EDX performed to Mo₂C/CNT.

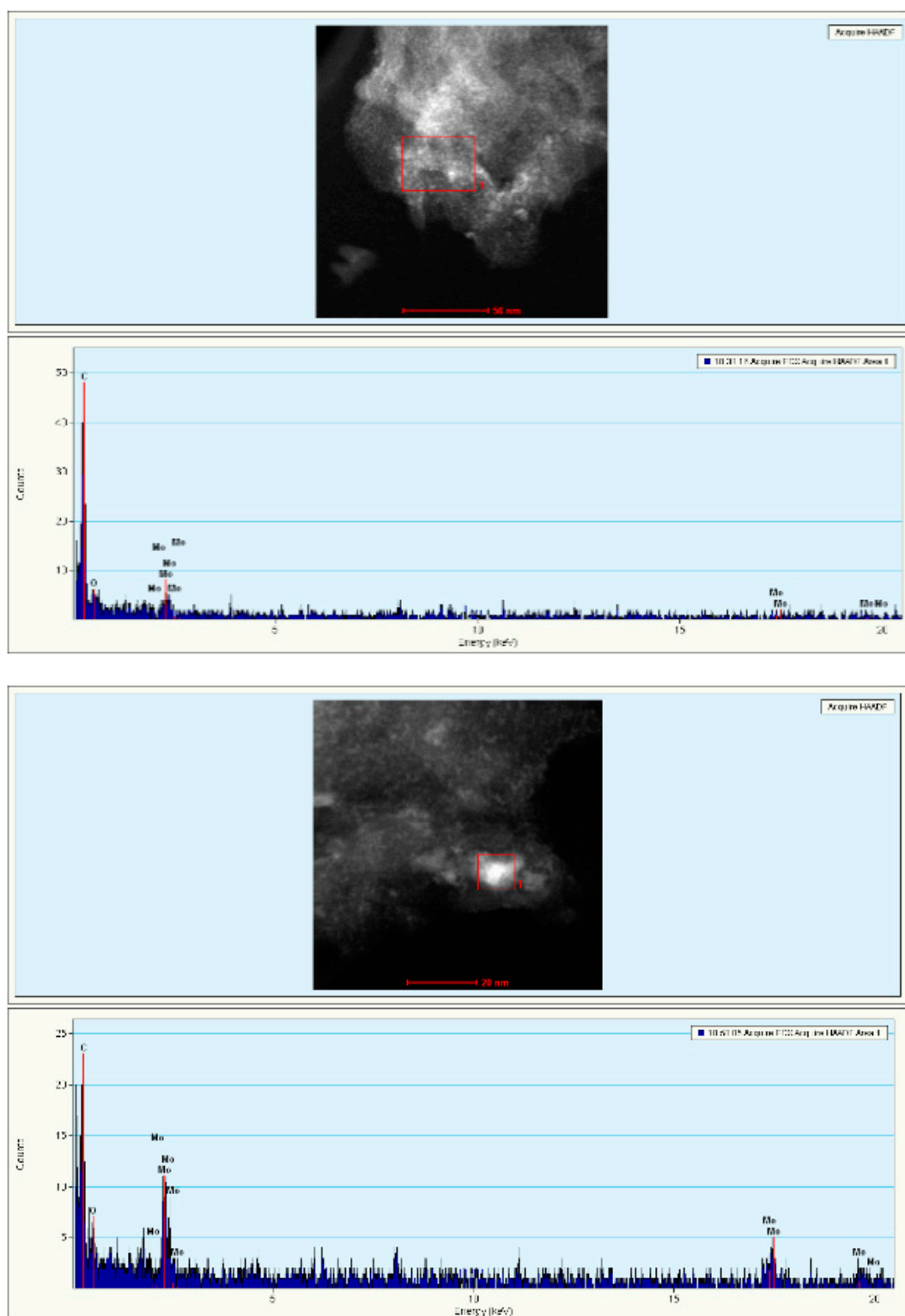


Figure S5. EDX performed to Mo₂C/RGO.

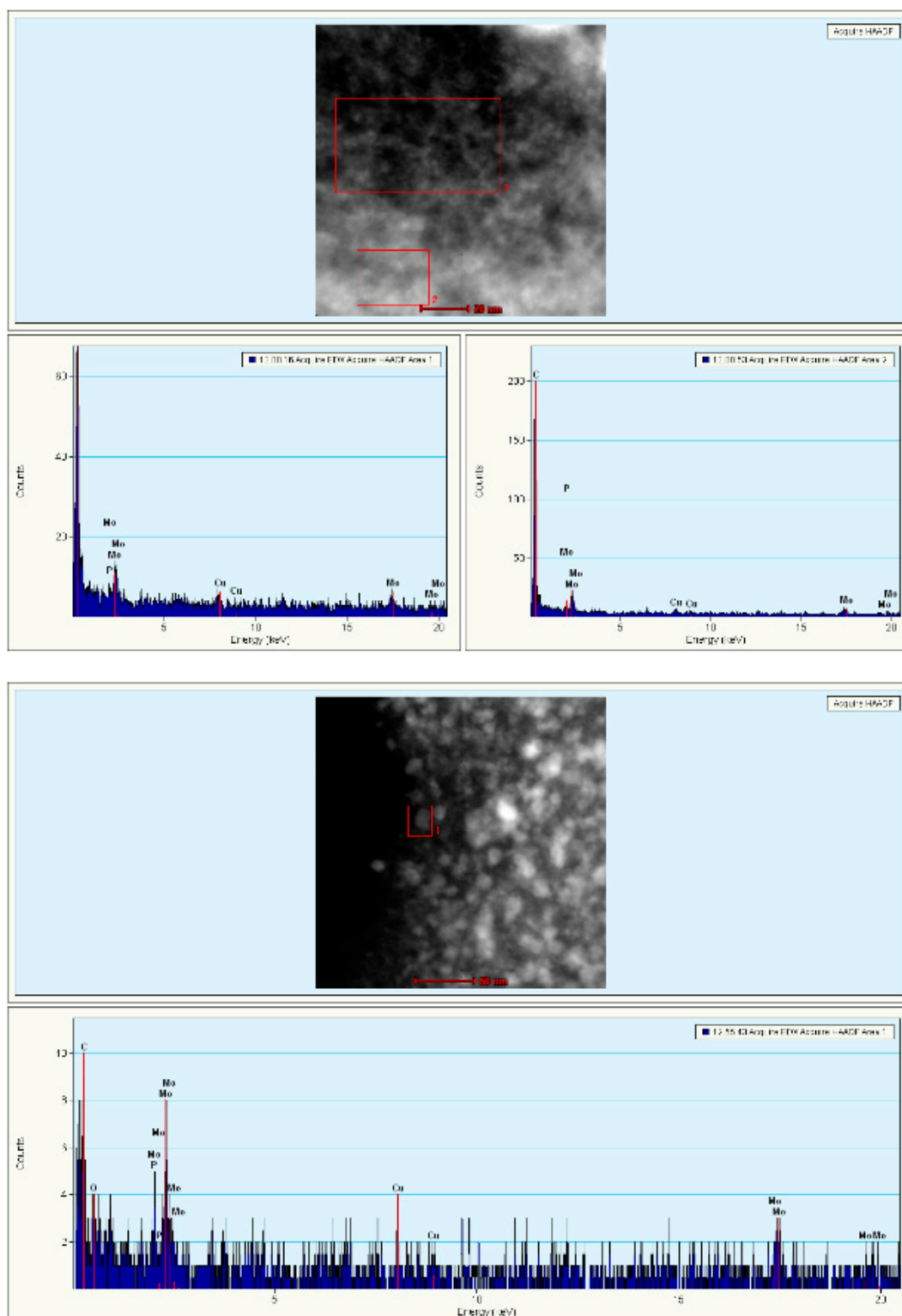


Figure S6. EDX performed to Mo₂C/AC.

Table S1. Product distribution (wt. %).

	Mo ₂ C/CNF	Mo ₂ C/CNT	Mo ₂ C/RGO	Mo ₂ C/AC
Cyclohexane + Benzene	6.01	0.10	0.19	0.91
Toluene	0.00	1.28	4.61	1.44
Anisole	3.07	0.00	0.34	2.25
Phenol	29.03	5.40	7.81	10.51
Methyl-Cyclohexanol	0.16	0.00	0.52	1.95
Cresol	5.31	0.99	1.87	2.09
Xylenol	0.70	0.59	0.82	1.59
Catechol	6.64	2.70	6.08	6.68
Others	17.02	5.66	0.76	16.28

Table S2. Selectivity (mol %).

Catalyst	Selectivity to Phenol (%)	Selectivity to C+B* (%)	Selectivity to Toluene (%)
Mo ₂ C/CNF	58.89	13.64	0
Mo ₂ C/CNT	51.52	1.11	12.52
Mo ₂ C/RGO	51.85	1.24	25.78
Mo ₂ C/AC	34.00	3.29	4.75

*Cyclohexane + Benzene

The selectivity was calculated as:

$$\text{Selectivity (\%)} = \text{mol of product/mol of guaiacol reacted} \times 100$$