# Supplementary Information

## Efficient hydrodeoxygenation of lignin-derived phenolic compounds under acid-free conditions over carbon-supported NiMo catalysts

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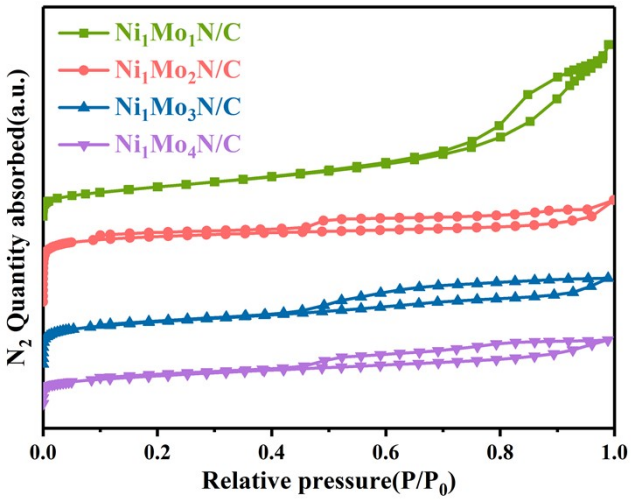


**Fig. S1.** $N_2$ adsorption/desorption isotherms of the $Ni_xMo_yN/C$ catalysts.

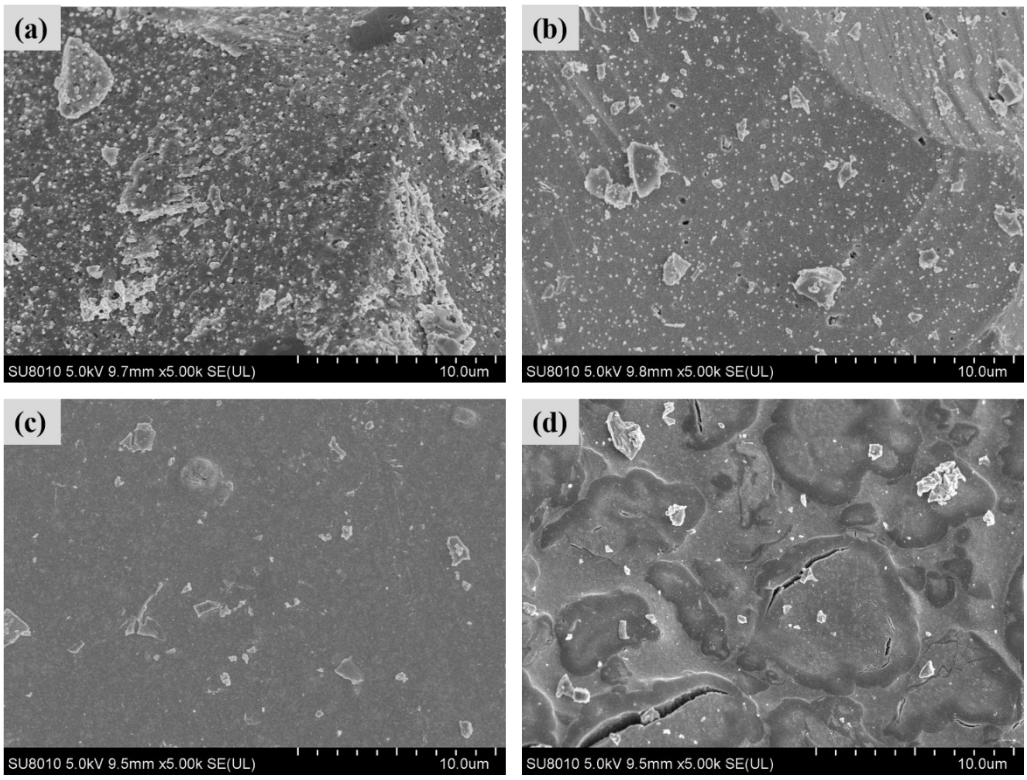


**Fig. S2.** SEM images of different $Ni_xMo_yN/C$ catalysts at large scale. (a) $Ni_1Mo_1N/C$ (b) $Ni_1Mo_2N/C$; (c) $Ni_1Mo_3N/C$; (d) $Ni_1Mo_4N/C$.

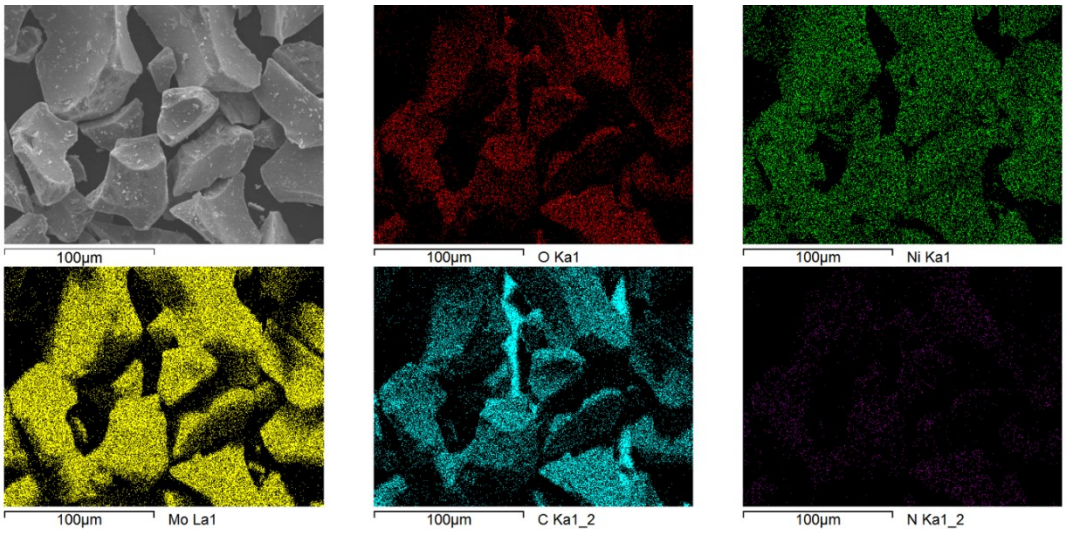


**Fig. S3.** SEM-based EDS elemental mappings for $Ni_1Mo_1N/C$ catalyst.

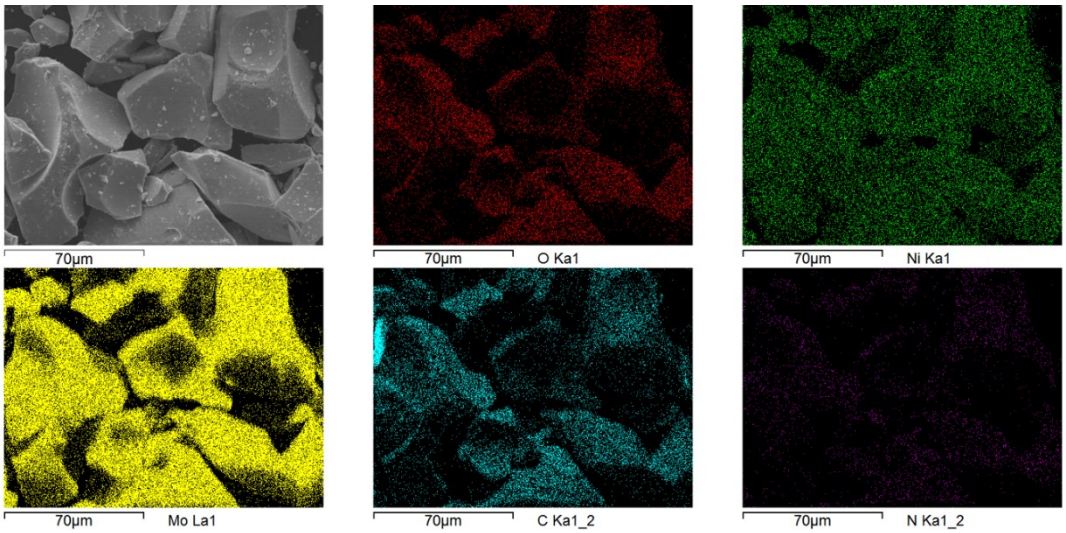


**Fig. S4.** SEM-based EDS elemental mappings for $Ni_1Mo_2N/C$ catalyst.

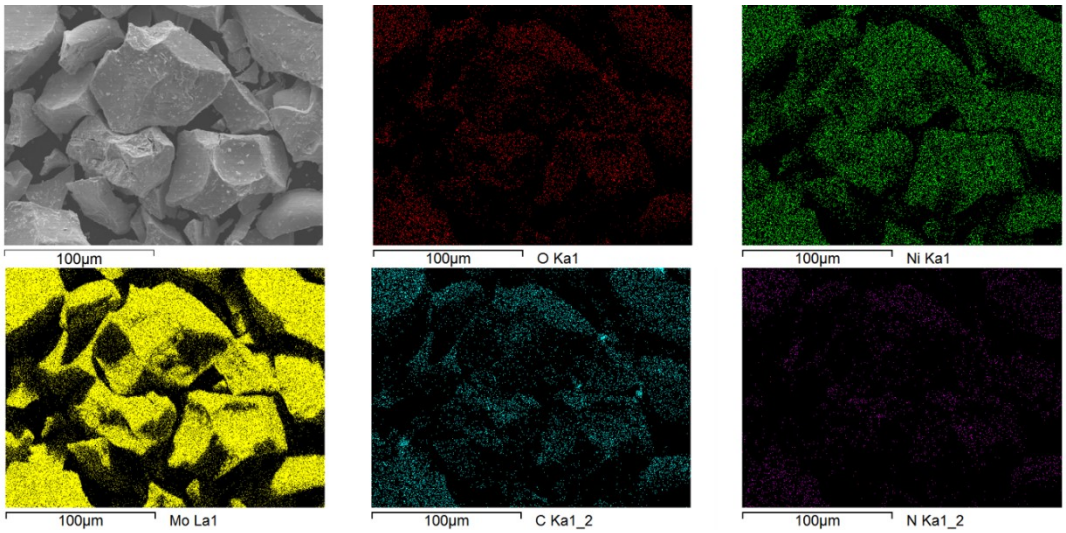


**Fig. S5.** SEM-based EDS elemental mappings for $Ni_1Mo_3N$/C catalyst.

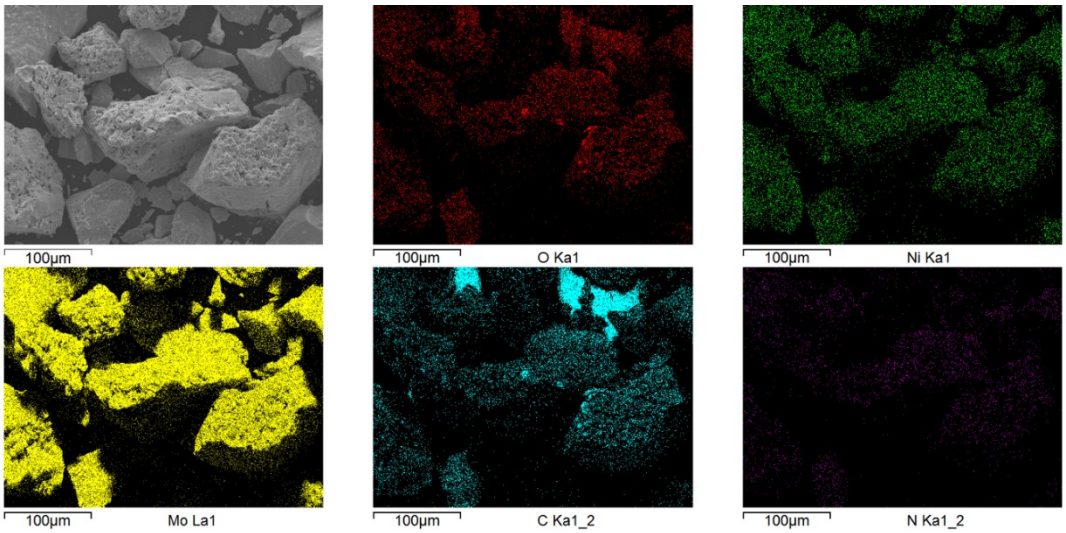


**Fig. S6.** SEM-based EDS elemental mappings for $Ni_1Mo_4N$/C catalyst.

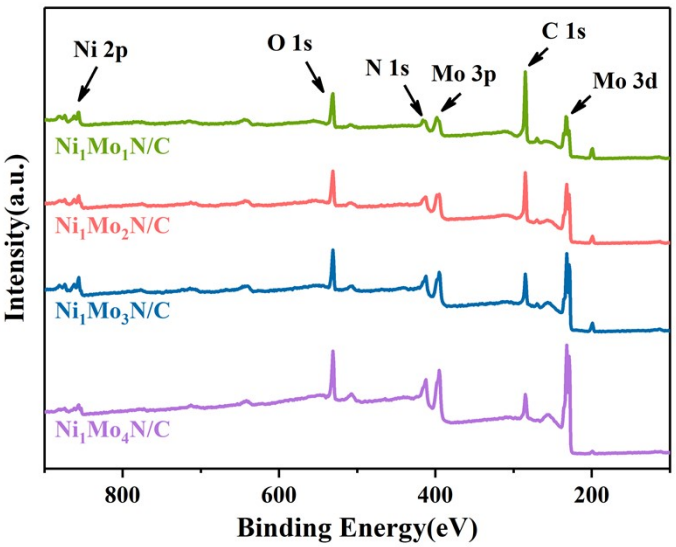


**Fig. S7.** XPS spectra of $Ni_xMo_yN/C$ catalysts: survey spectra.

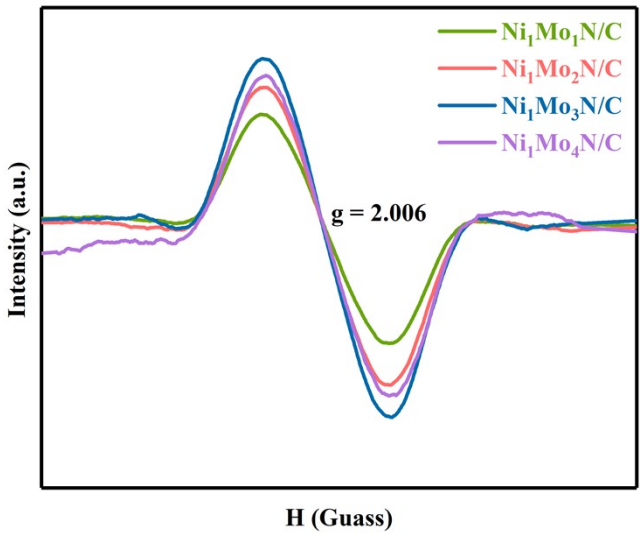


**Fig. S8.** EPR profiles of the different $Ni_xMo_yN/C$ catalysts.

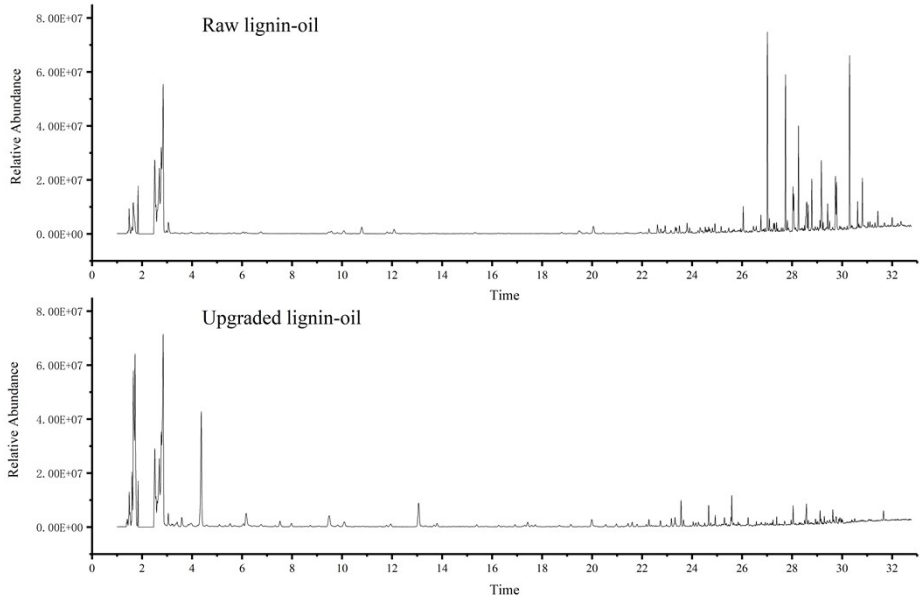


**Fig. S9.** Chromatogram of the raw lignin-oil before and after the HDO upgrading.