Electronic Supplementary Material (ESI) for RSC Advances.

Preparation of Al/Fe-PILC clay catalysts from concentrated precursors: enhanced hydrolysis of pillaring metals and intercalation

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Electronic Supplementary Material

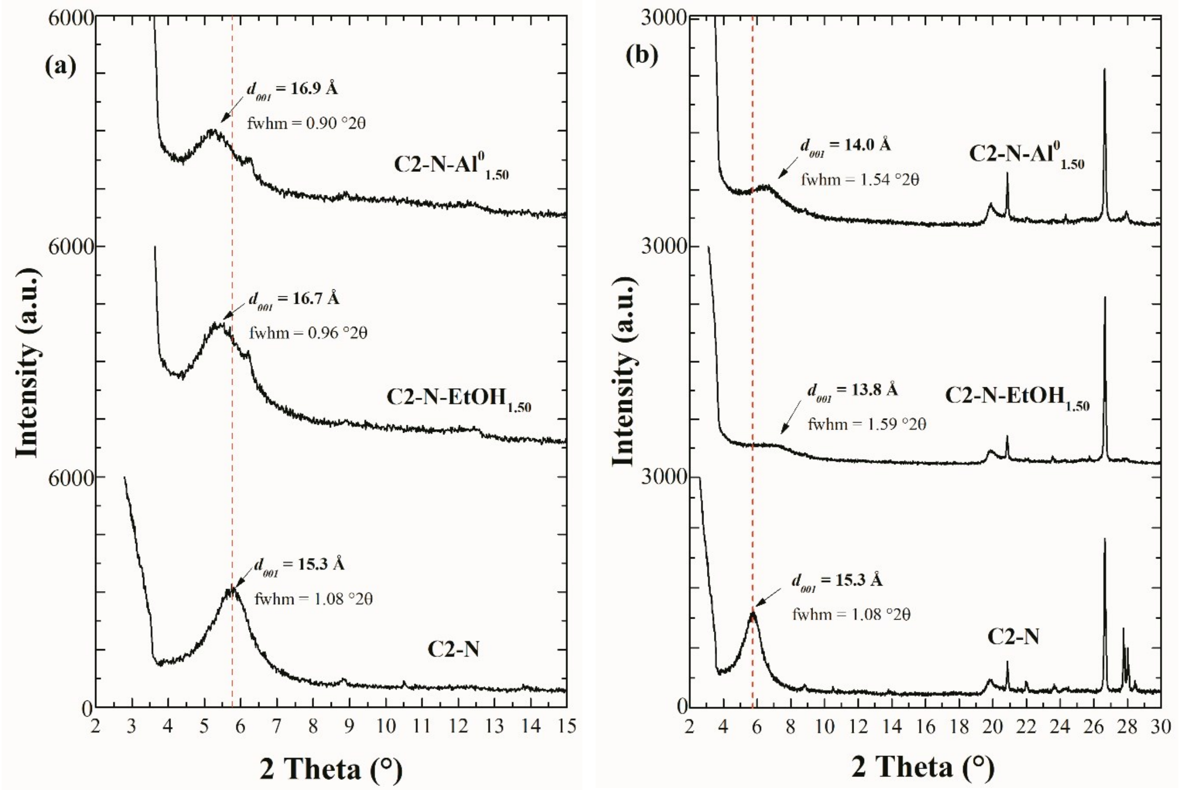
Figure S1. XRD patterns of natural (C2-N) modified materials as a function of both the refining of the starting clay and the intercalation method: (a) oriented specimens of the Al/Fe-interlayered (I) samples (dried at 60 °C); (b) Powder XRD patterns of the Al/Fe-pillared samples (calcined at 500 °C).

Figure S2. Nitrogen adsorption-desorption isotherms of the Al/Fe-PILC materials prepared as a function of the intercalating method from the unrefined starting clay.

Figure S3. H_2-TPR diagrams of the unrefined starting clay and its modified materials as a function of the method of intercalation (the hydrogen consumption and maximal temperature corresponding to every signal are shown).

Figure S4. Catalytic behavior of the C2-N-derived materials in the CWPO degradation of phenol (solid lines) and TOC mineralization (dotted lines). Catalyst loading = 0.5 g.dm^{-3}; [Phenol]$_0$ = 0.76 mol.dm^{-3}; $[H_2O_2]_{added}$ = 37.9 mmol.dm^{-3}, V H_2O_2 added = 100 cm^3; H_2O_2 stepwise addition = 1.67 cm^3.min^{-1}; pH = 3.7; T = 25.0 ± 0.1 °C; ambient pressure = 76 kPa.

Table S1. Chemical composition normalized to the content of SiO_2 (% w/w) in the starting aluminosilicates and derived pillared clays and SiO_2/Al_2O_3 mass ratios.



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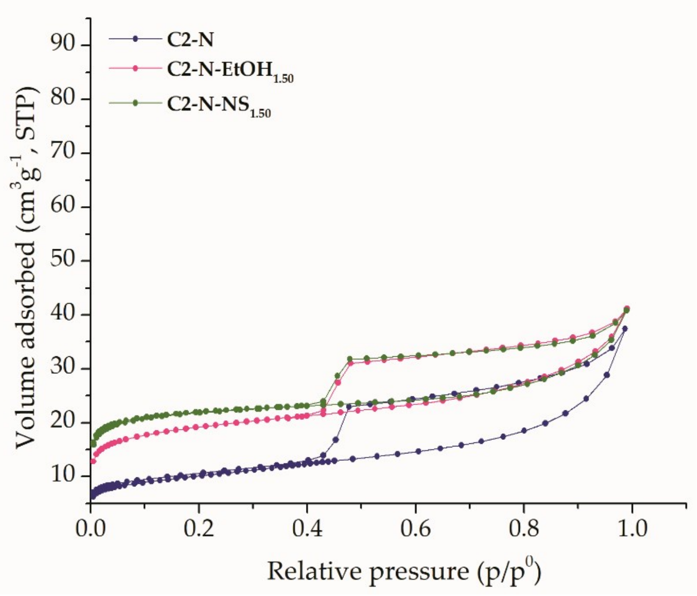

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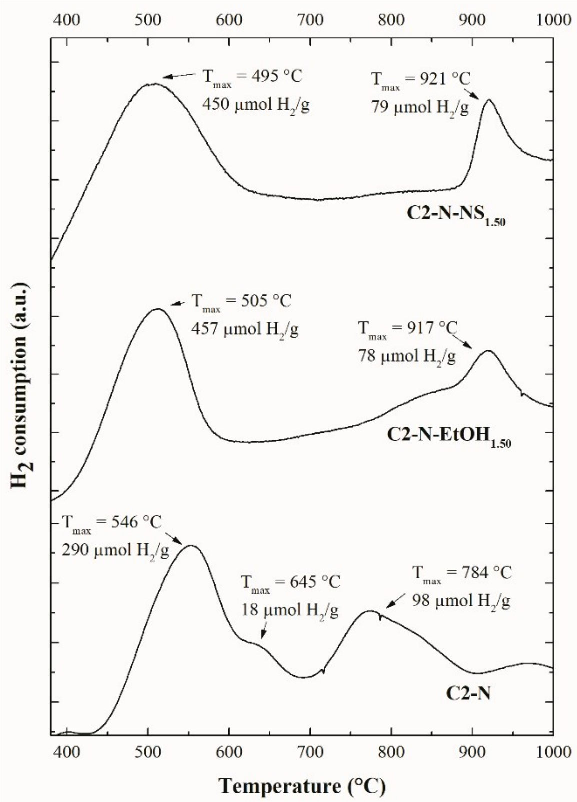

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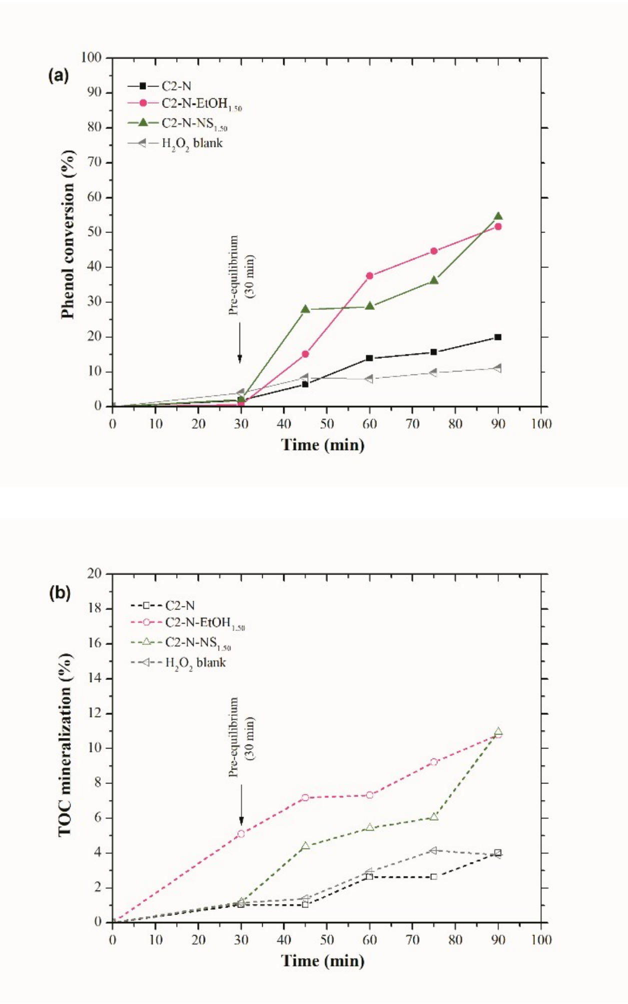

Figure S4. Catalytic behavior of the C2-N-derived materials in: (a) the CWPO degradation of phenol, and (b) the TOC mineralization (dotted lines). Catalyst loading = 0.5 g.dm^{-3}; [Phenol]$_0$ = 0.76 mol.dm^{-3}; [H_2O_2]$_{added}$ = 37.9 mmol.dm^{-3}, V H_2O_2 added = 100 cm^3; H_2O_2 stepwise addition = 1.67 cm^3.min^{-1}; pH = 3.7; T = 25.0 ± 0.1 °C; ambient pressure = 76 kPa.

Table S1. Chemical composition normalized to the content of SiO_2 (% w/w) in the starting aluminosilicates and derived pillared clays and SiO_2/Al_2O_3 mass ratios.

Material	**SiO_2**	**Al_2O_3**	**Fe_2O_3**	**MgO**	**TiO_2**	**CaO**	**K_2O**	**Na_2O**	**SiO_2/Al_2O_3**
C2-N	53.15	16.52	6.86	2.22	0.83	1.84	0.83	1.30	3.22
C2-N-EtOH$_{1.50}$	50.34	25.90	8.42	2.08	0.99	0.35	0.74	0.44	1.94
C2-N-NS$_{1.50}$	49.82	26.39	8.02	1.97	0.96	0.36	0.70	0.46	1.89
C2-R	49.31	17.84	8.61	2.24	0.89	0.86	0.76	0.44	2.76
C2-R-EtOH$_{1.50}$	48.22	25.15	10.08	1.70	0.88	0.11	0.66	0.22	1.92
C2-R-$H_2O_{1.50}$	48.59	25.96	9.86	1.67	0.83	0.10	0.62	0.21	1.80
C2-R-NS$_{1.50}$	49.75	26.34	10.22	1.70	0.86	0.11	0.64	0.20	1.96
C2-R-NS$_{2.58}$	48.16	26.41	10.18	1.72	0.87	0.13	0.65	0.23	1.82

The results were determined by XRF analyses