

# Carbon nanomaterials from polyolefin waste: effective catalysts for quinoline degradation through catalytic wet peroxide oxidation

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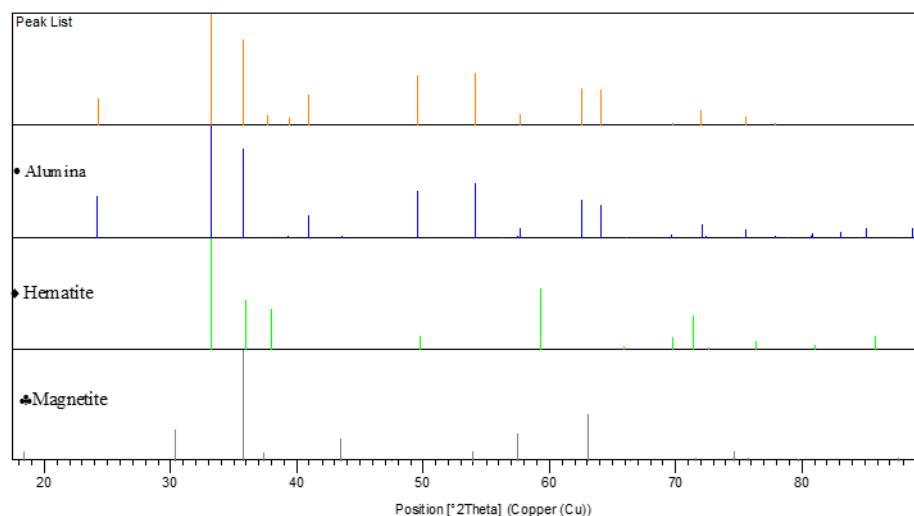
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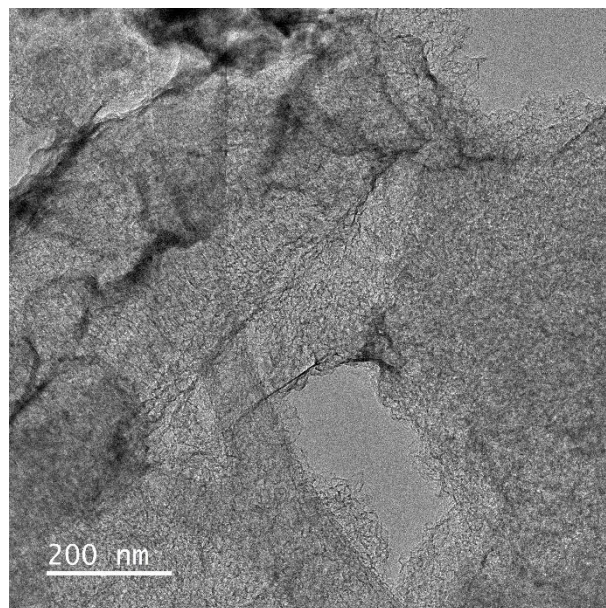
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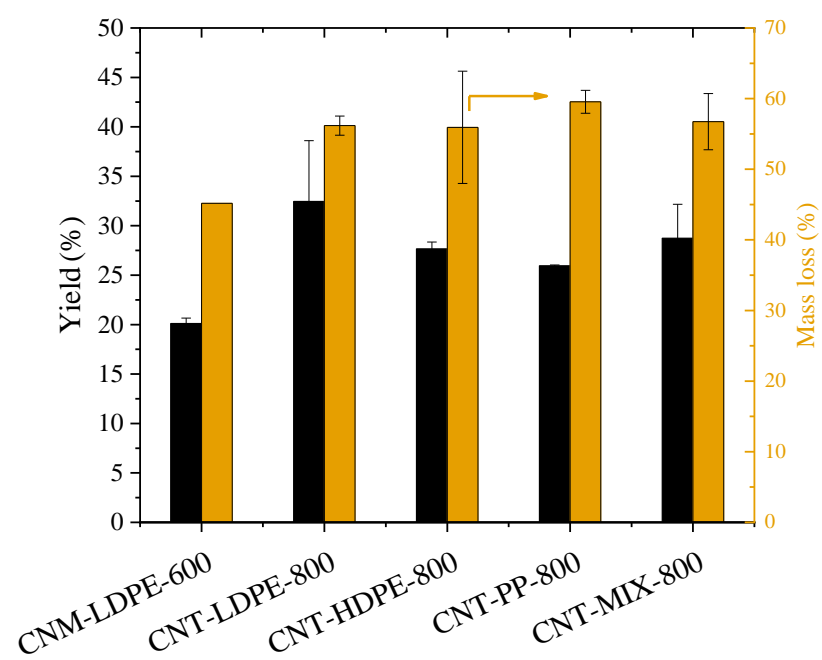
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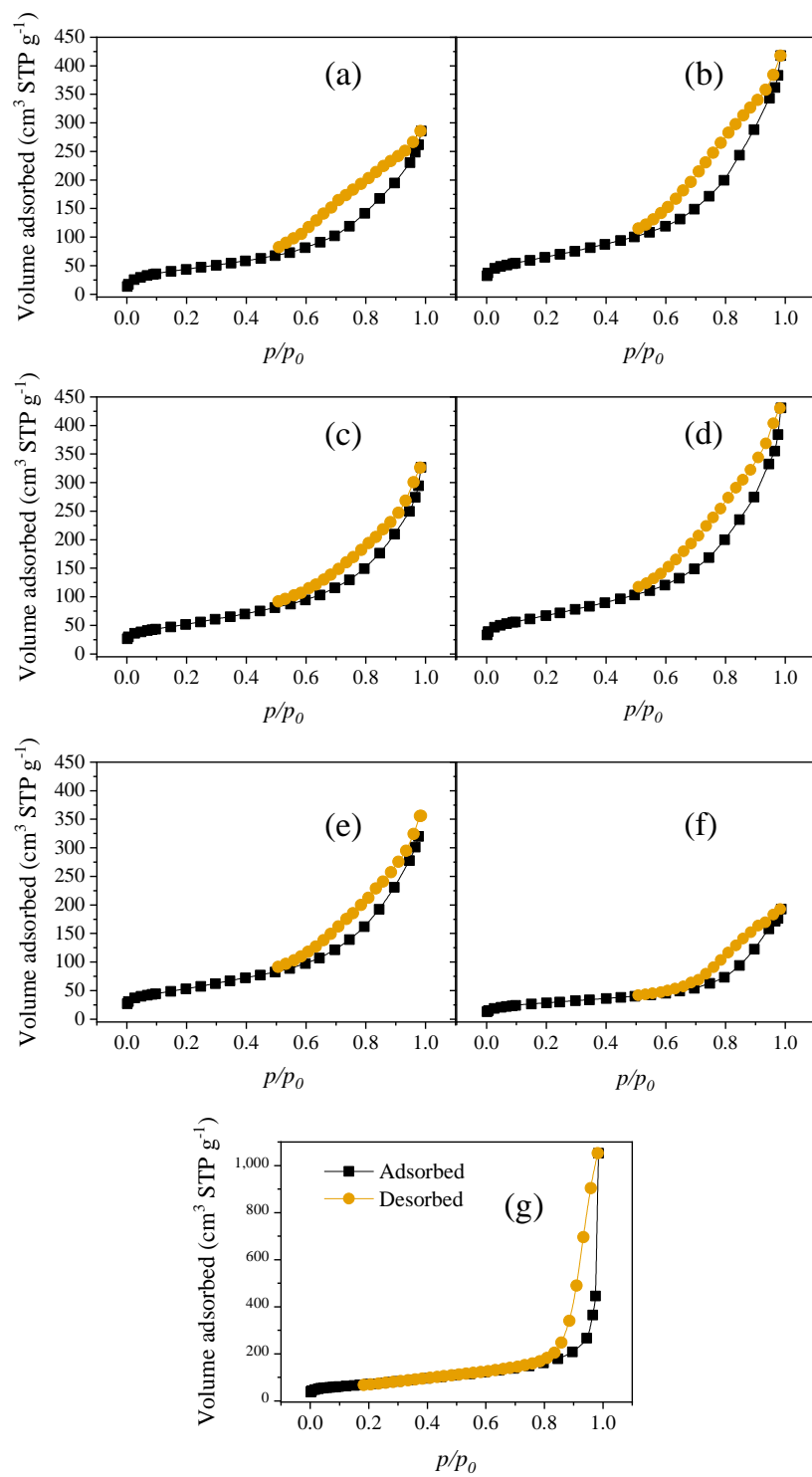
**Figure S1.** COD reference cards of alumina, hematite, and magnetite.



**Figure S2.** TEM image of CNM-LDPE-600 showing its amorphous nature.



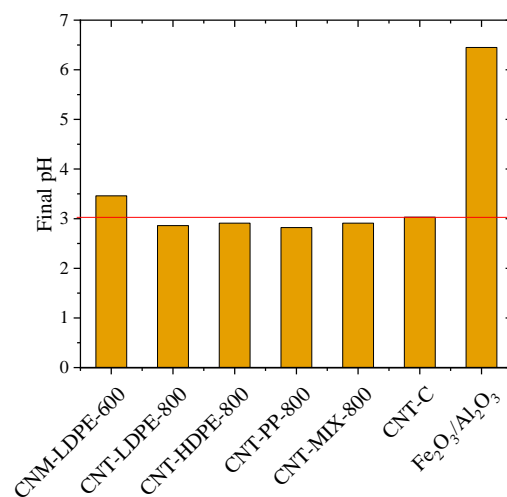
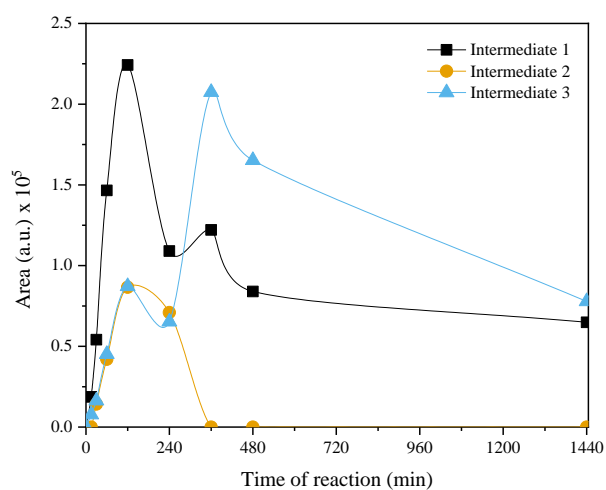
**Figure S3.** Yield of the materials after CVD and mass loss after purification.



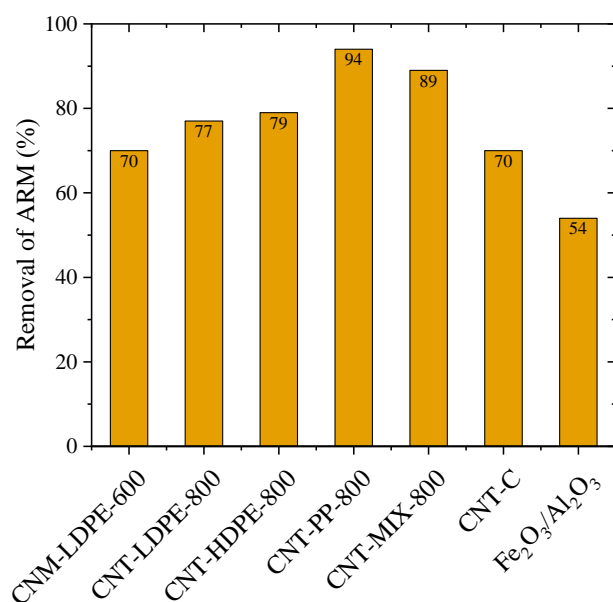
**Figure S4.** Textural properties of (a) CNM-LDPE-600, (b) CNT-LDPE-800, (c) CNT-HDPE-800, (d) CNT-PP-800, (e) CNT-MIX-800, (f) Fe<sub>2</sub>O<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub>, (g) CNT-C.

(a)

(b)



(c)



**Figure S5.** (a) Formation and degradation of intermediate compounds detected by HPLC during the non-catalytic wet peroxide oxidation of QN; (b) pH after CWPO in the presence of the catalysts (Red line indicates initial pH); and (c) Abatement of ARM after CWPO in the presence of the catalysts. Conditions:  $\text{pH}_0 = 3.0$ ,  $[\text{QN}]_0 = 100 \text{ mg L}^{-1}$ ,  $[\text{H}_2\text{O}_2]_0 = 6.2 \text{ g L}^{-1}$ ,  $C_{\text{cat}} = 2.5 \text{ g L}^{-1}$  (where applicable),  $T = 80^\circ \text{C}$ .