Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting Information

Ethylene glycol intercalated monometallic layered double hydroxide based on iron as an efficient bifunctional catalyst

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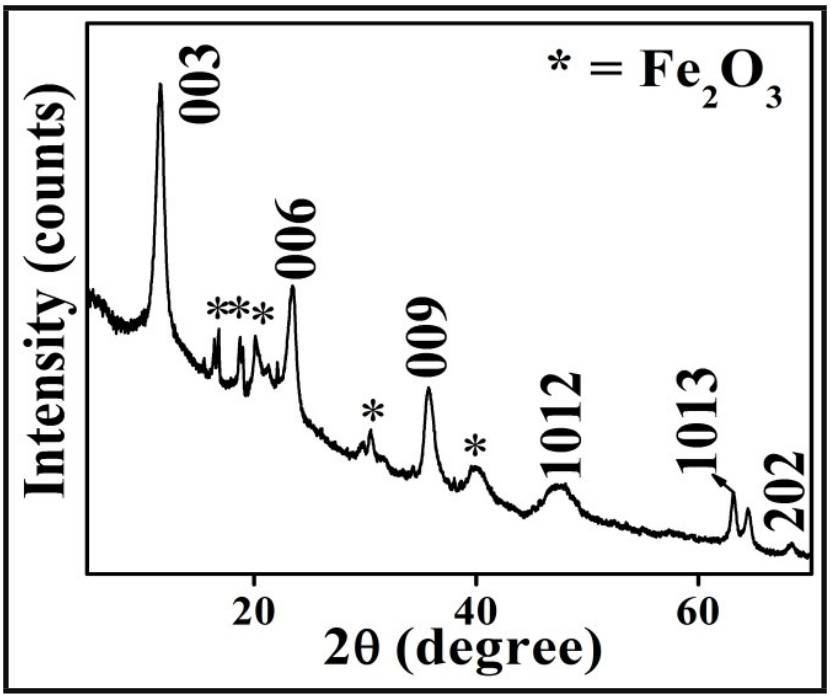

Fig. S1 PXRD pattern of the product from the reaction of $FeCl_3$ and urea employing water as the solvent under hydrothermal conditions.

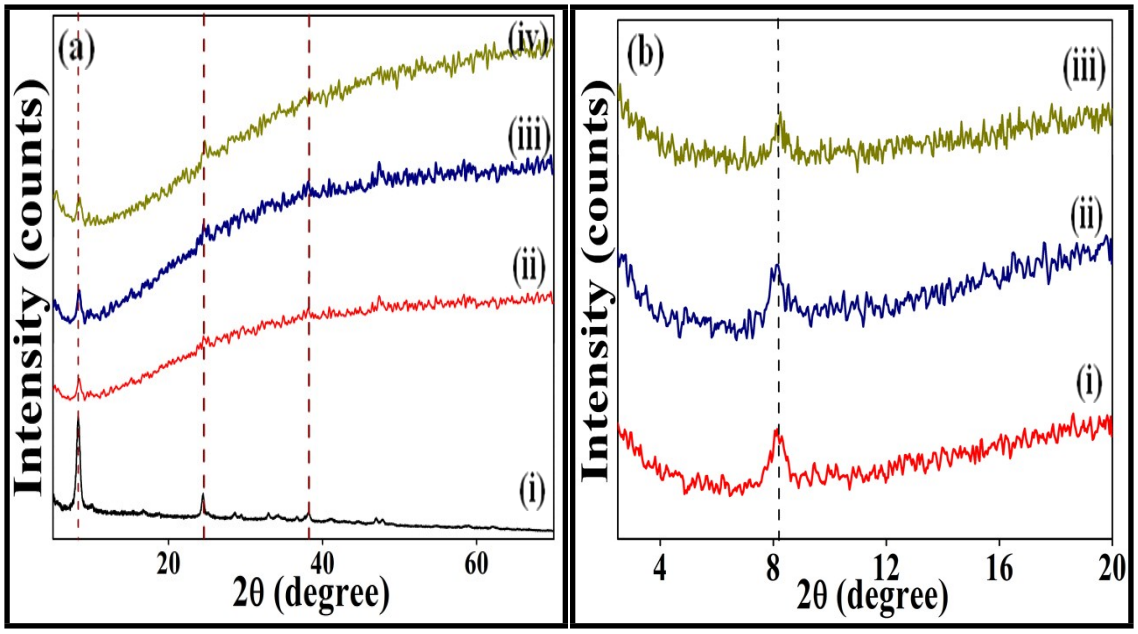

Fig. S2 (A) PXRD pattern of EG intercalated Fe^{II} - Fe^{III} – LDH (i), after soaking 50 mg of the catalyst in XO (ii), MO (iii) and MB (iv) dye solutions (1×10^{-4} M and for 24 h) at room temperature. (B) PXRD patterns of these samples in low angle region (2-20°) of the product after soaking the soaking experiments in XO (i), (ii) in MO (ii) and MB (iii).

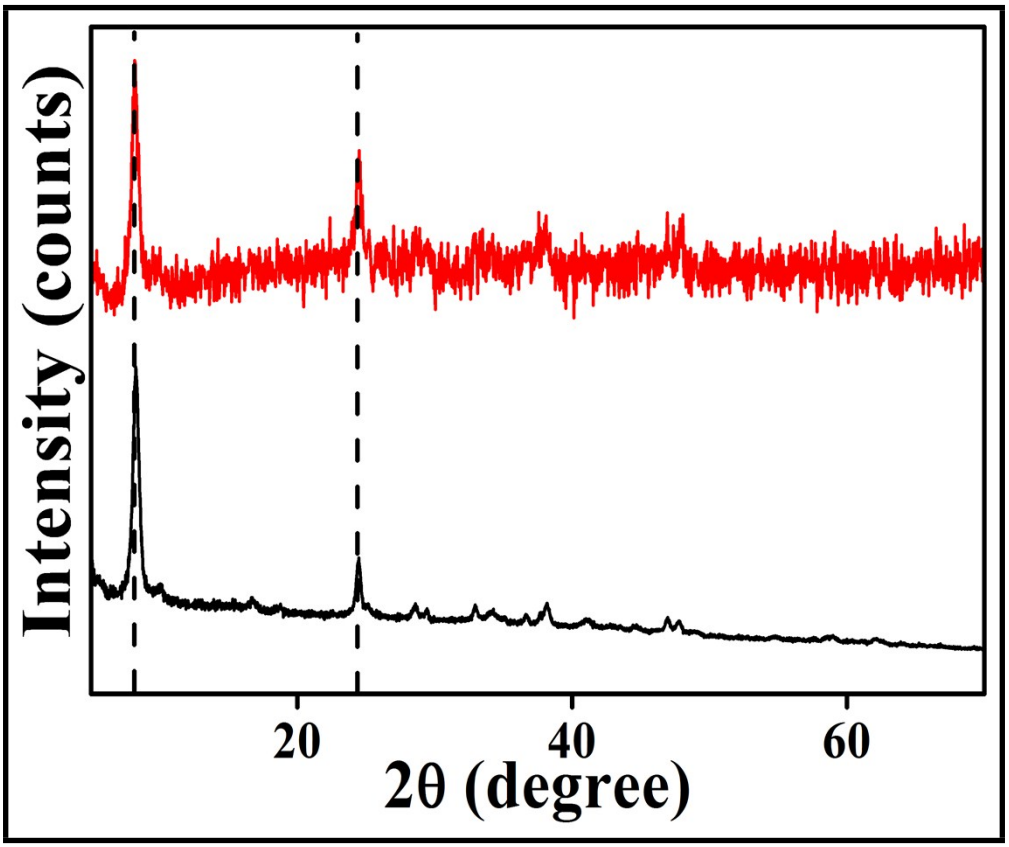

Fig. S3 (a) PXRD pattern of the EG intercalated Fe^{II} - Fe^{III} - LDH synthesized and (b) after its use as a catalyst (first cycle) for the oxidative degradation of XO.

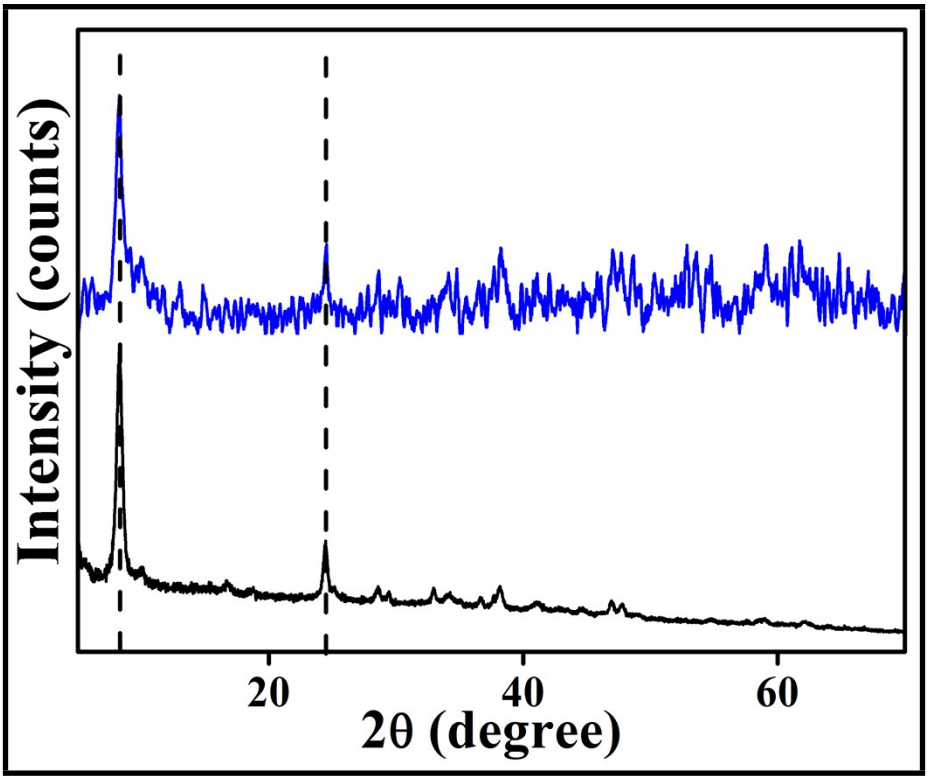

Fig. S4 (a) PXRD pattern of the EG intercalated Fe^{II} - Fe^{III} - LDH synthesized and (b) after its use as a catalyst (first cycle) for the reduction of p-nitrophenol.

Table S1 Summary of the rate constants (*k*) obtained using our sample (EG intercalated Fe (II) - Fe (III) - LDH)

Substrate	1st cycle	2nd cycle	3rd cycle	4th cycle
Xylenol orange	348×10^{-3} min^{-1} (5.8×10^{-3} s^{-1})	330×10^{-3} min^{-1} (5.5×10^{-3} s^{-1})	204×10^{-3} min^{-1} (3.4×10^{-3} s^{-1})	108×10^{-3} min^{-1} (1.8×10^{-3} s^{-1})
p-nitrophenol	258.6×10^{-3} min^{-1} (4.31×10^{-3} s^{-1})	251.4×10^{-3} min^{-1} (4.19×10^{-3} s^{-1})	198×10^{-3} min^{-1} (3.3×10^{-3} s^{-1})	114×10^{-3} min^{-1} (1.9×10^{-3} s^{-1})