Supplementary Information for

Controlled Decationization of X Zeolite: Mesopore Generation within Zeolite Crystallites for Bulky Molecular Adsorption and Transformation

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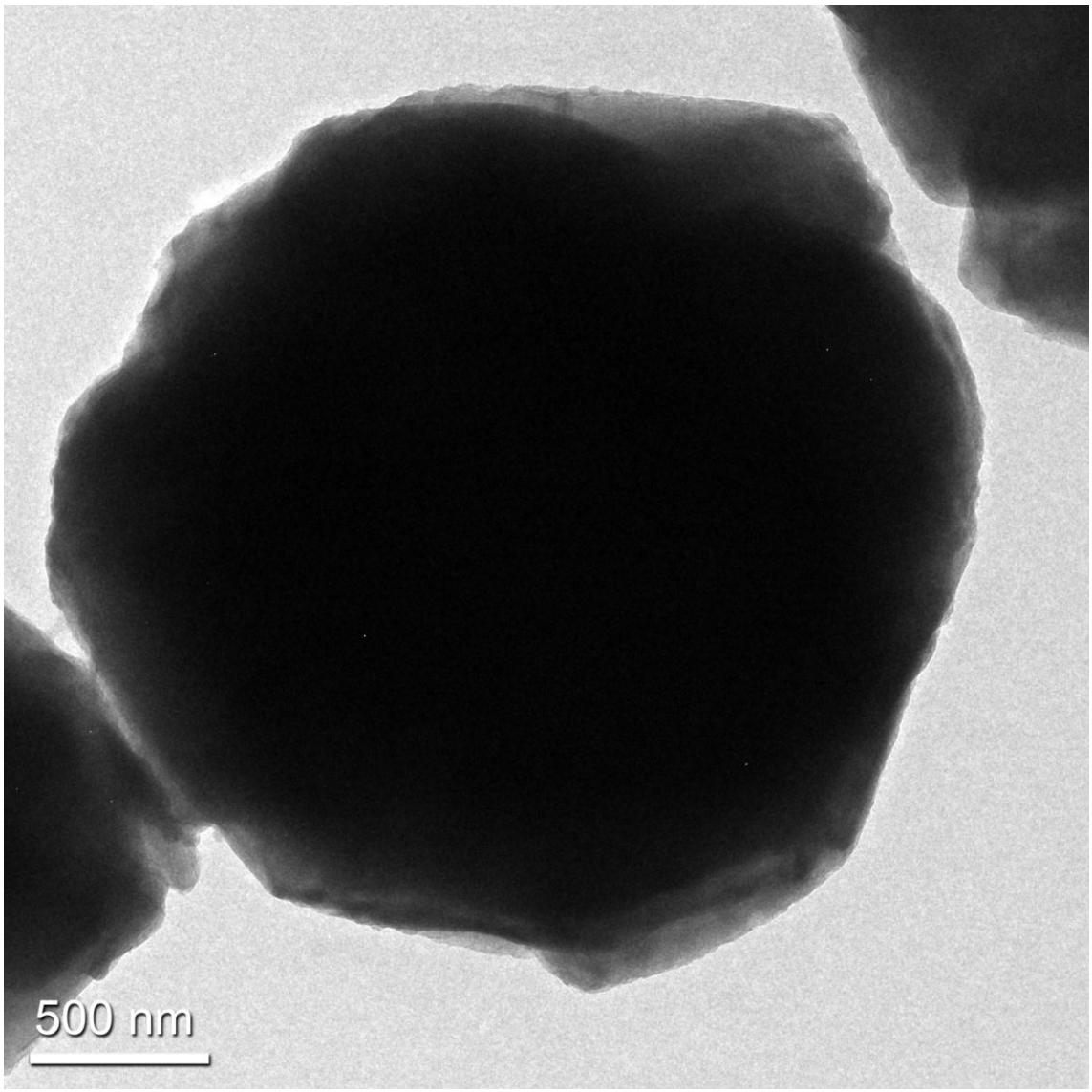

Fig. S1 TEM image of NaX zeolite

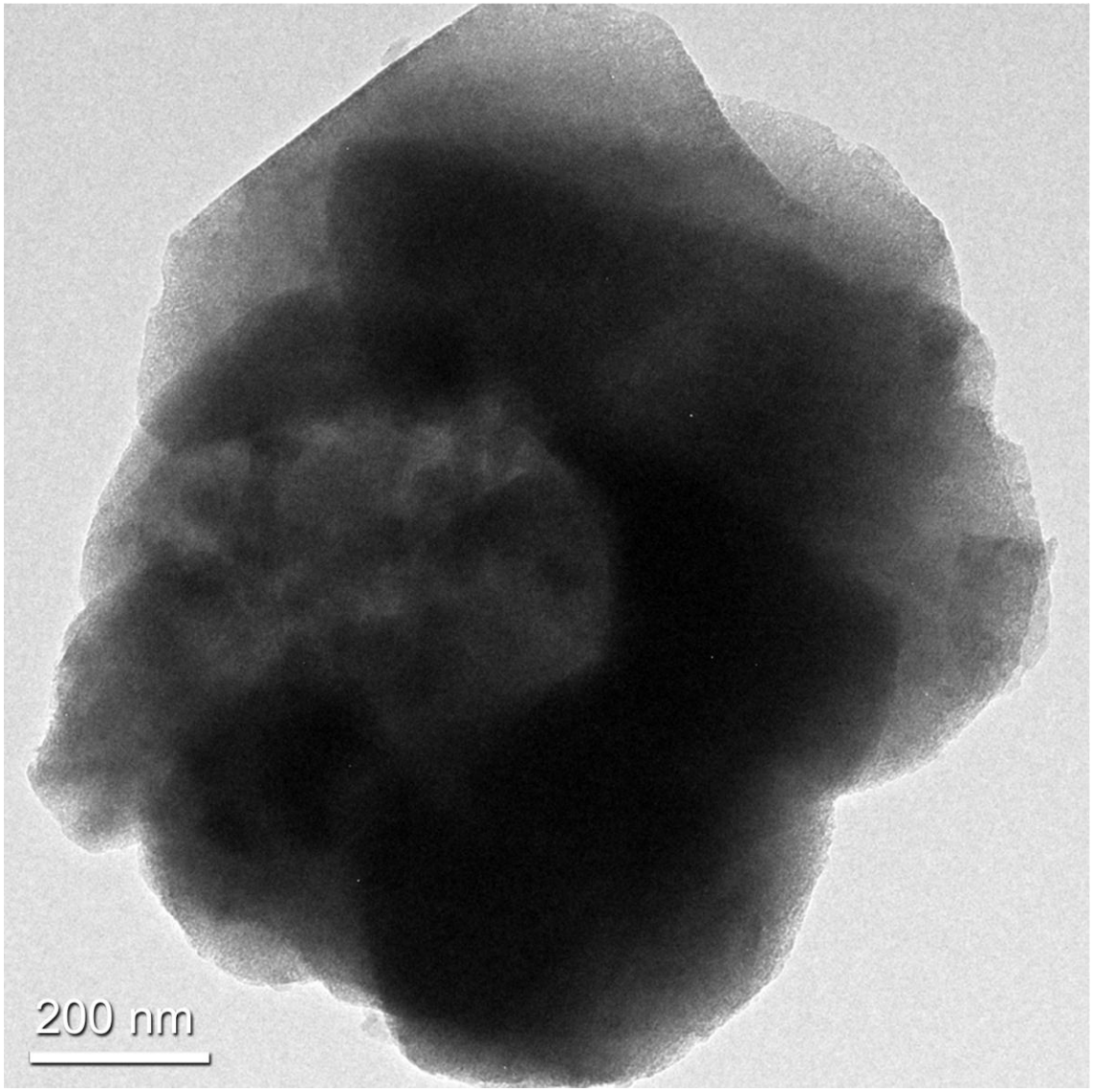

Fig. S2 TEM image of *decatX*-0.51 sample

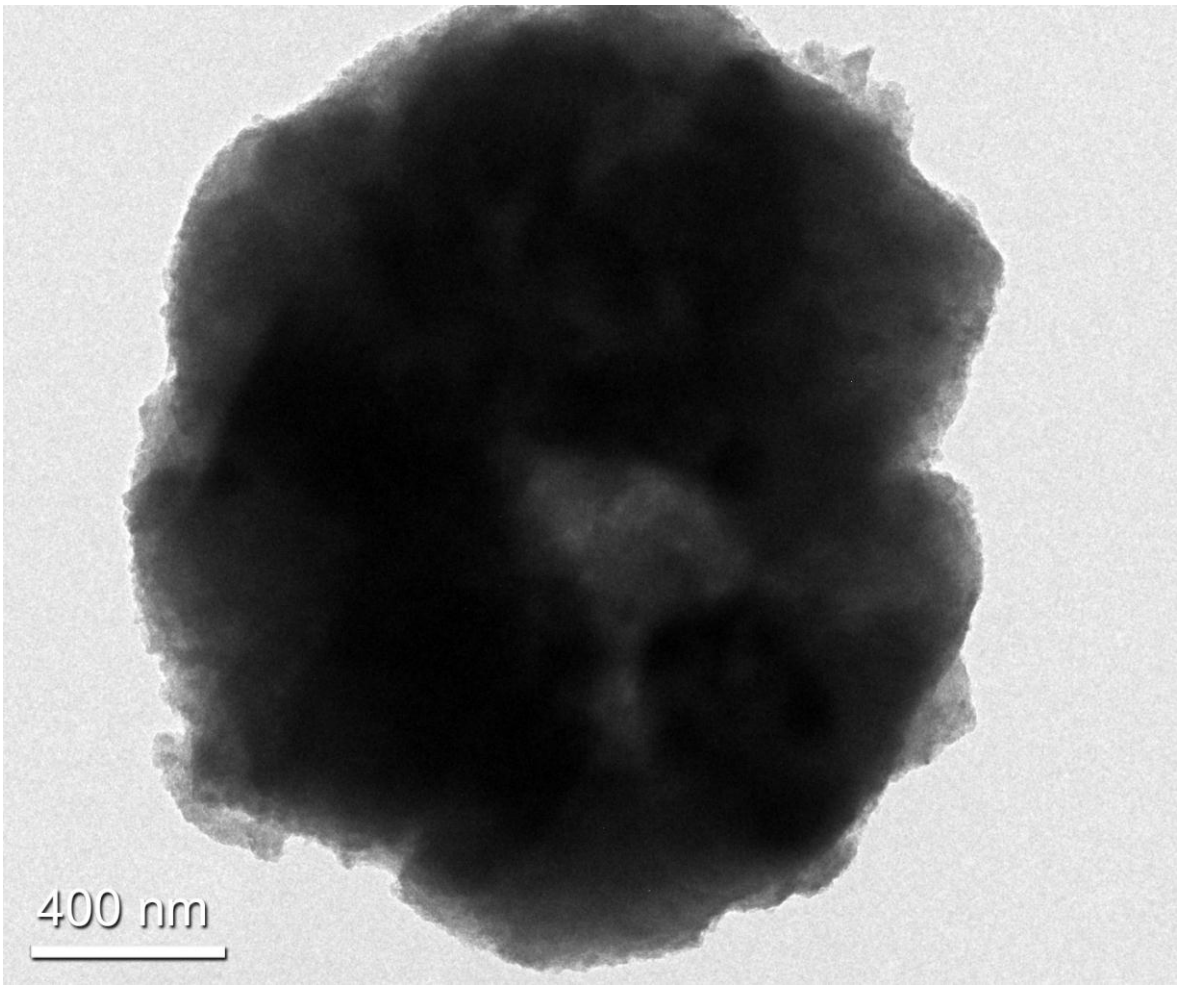

Fig. S3 TEM image of HCl-treated NaX sample

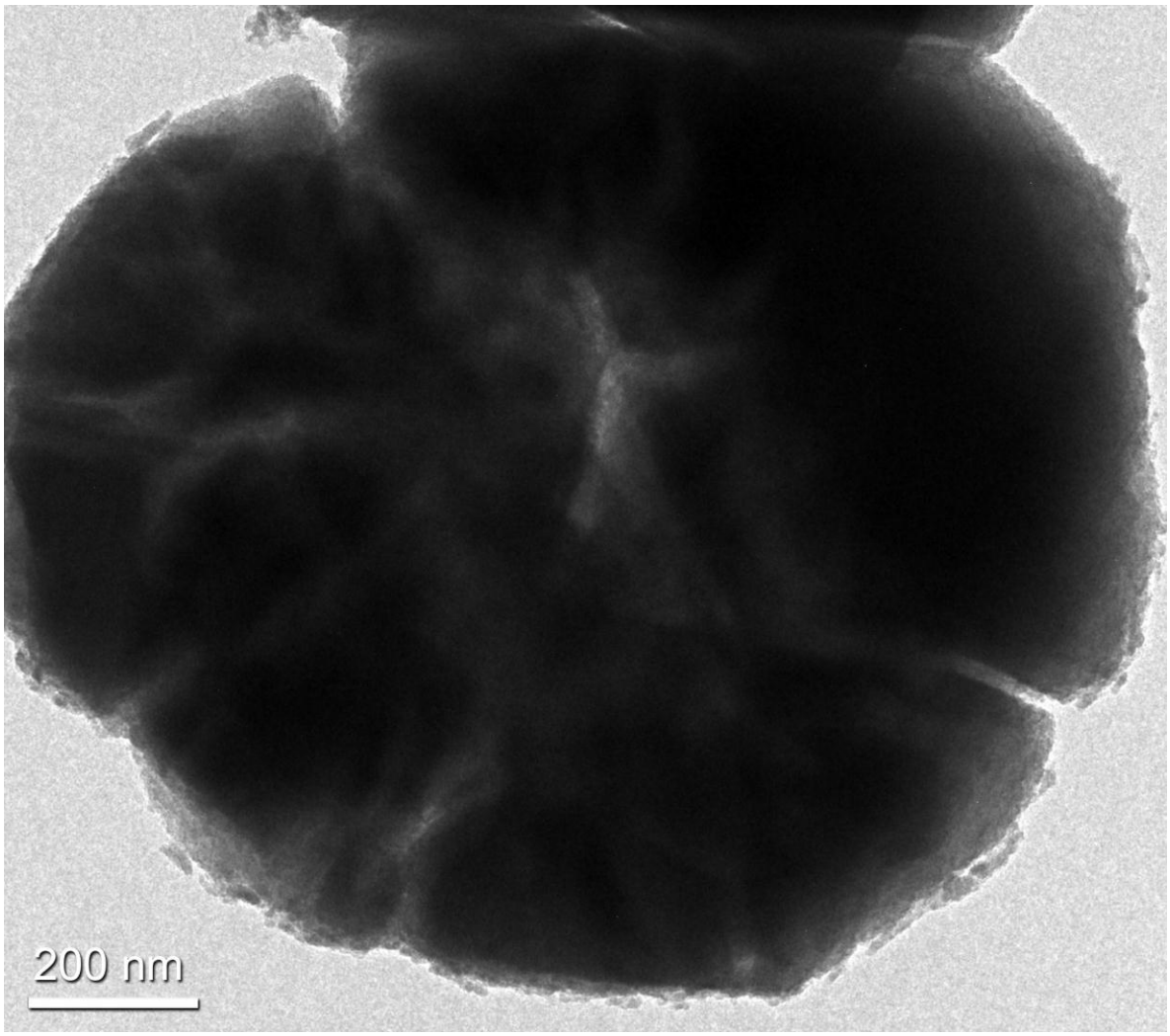

Fig. S4 TEM image of Na_2H_2EDTA-treated NaX sample

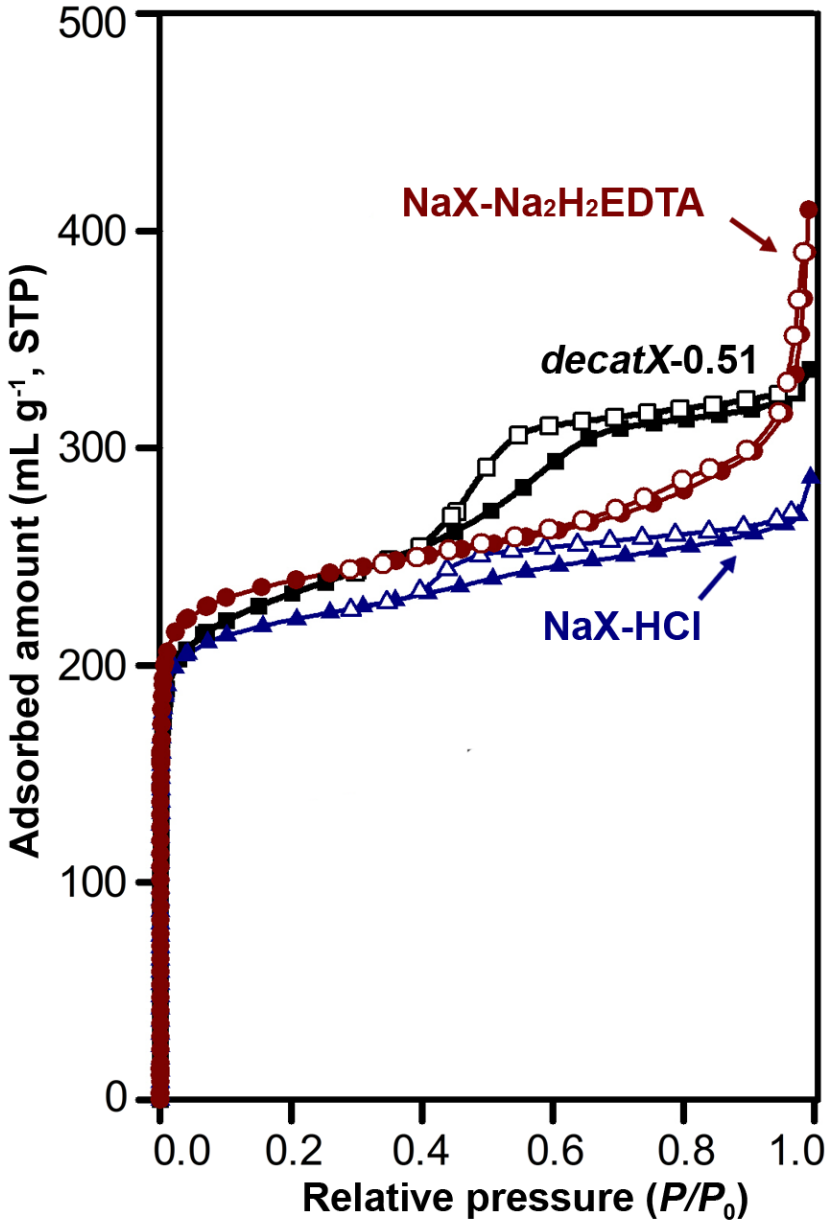

Fig. S5 Ar adsorption-desorption isotherms (87 K) of the *decatX*-0.51, Na_2H_2EDTA-treated NaX and HCl -treated NaX

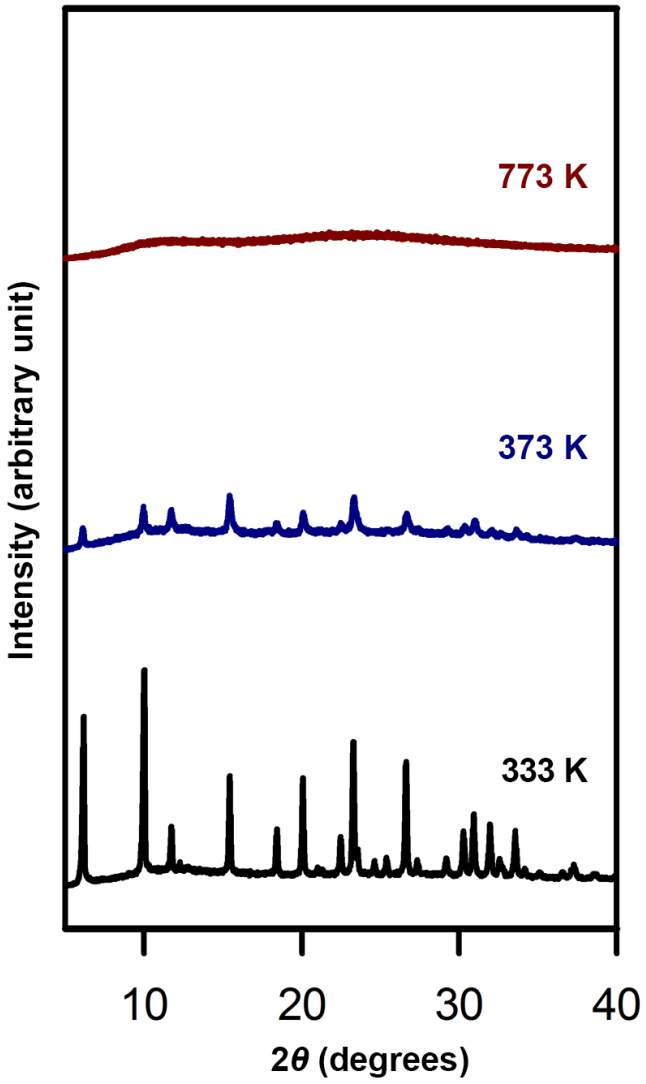

Fig. S6 XRD patterns of the fully NH_4^+-exchanged X zeolite after the thermal treatment at various temperatures

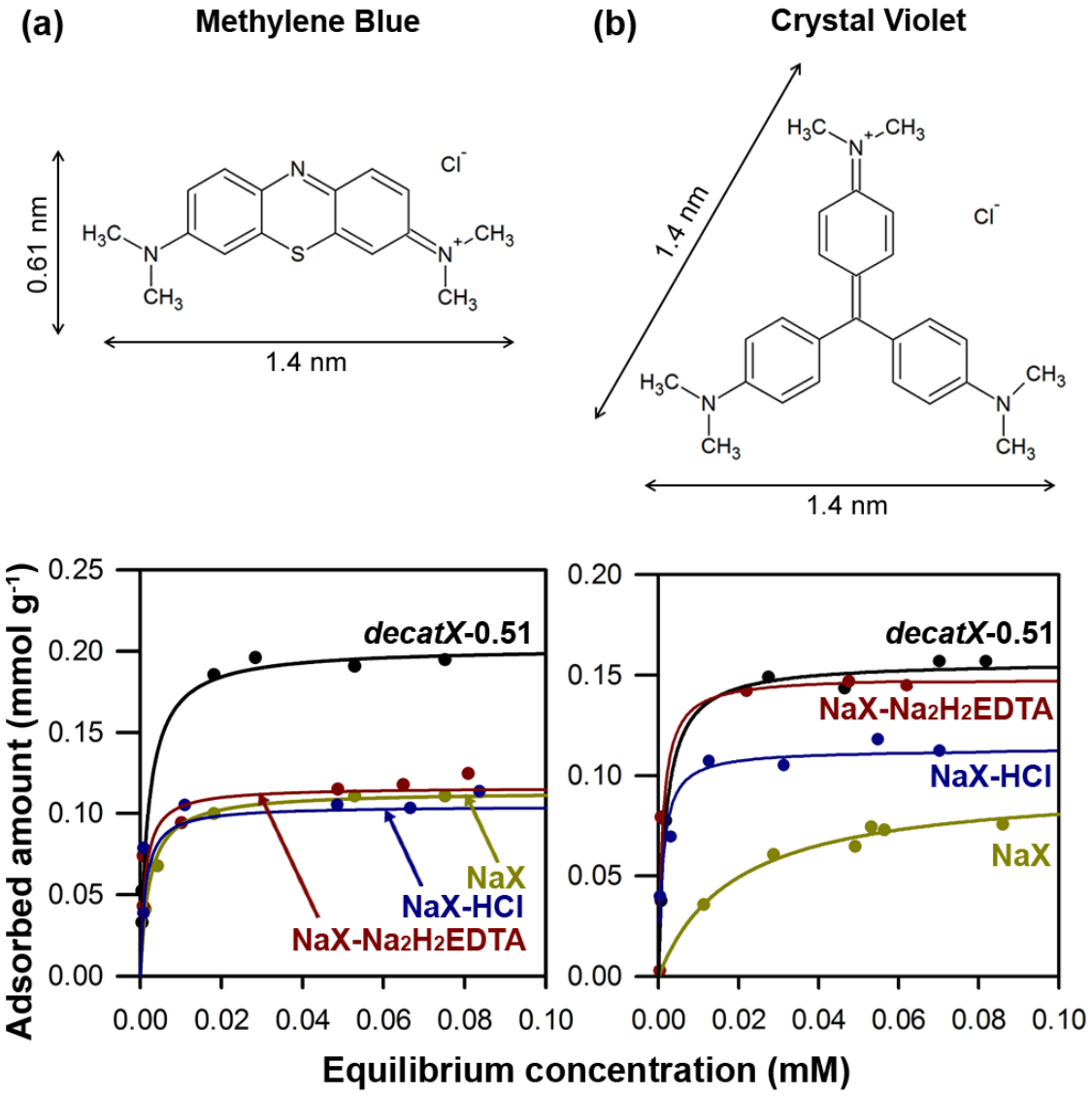

Fig. S7 Adsorption isotherms of basic dyes on NaX, *decatX*-0.51, Na_2H_2EDTA-treated NaX and HCl- treated NaX at 298 K. (a) Methylene blue and (b) crystal violet

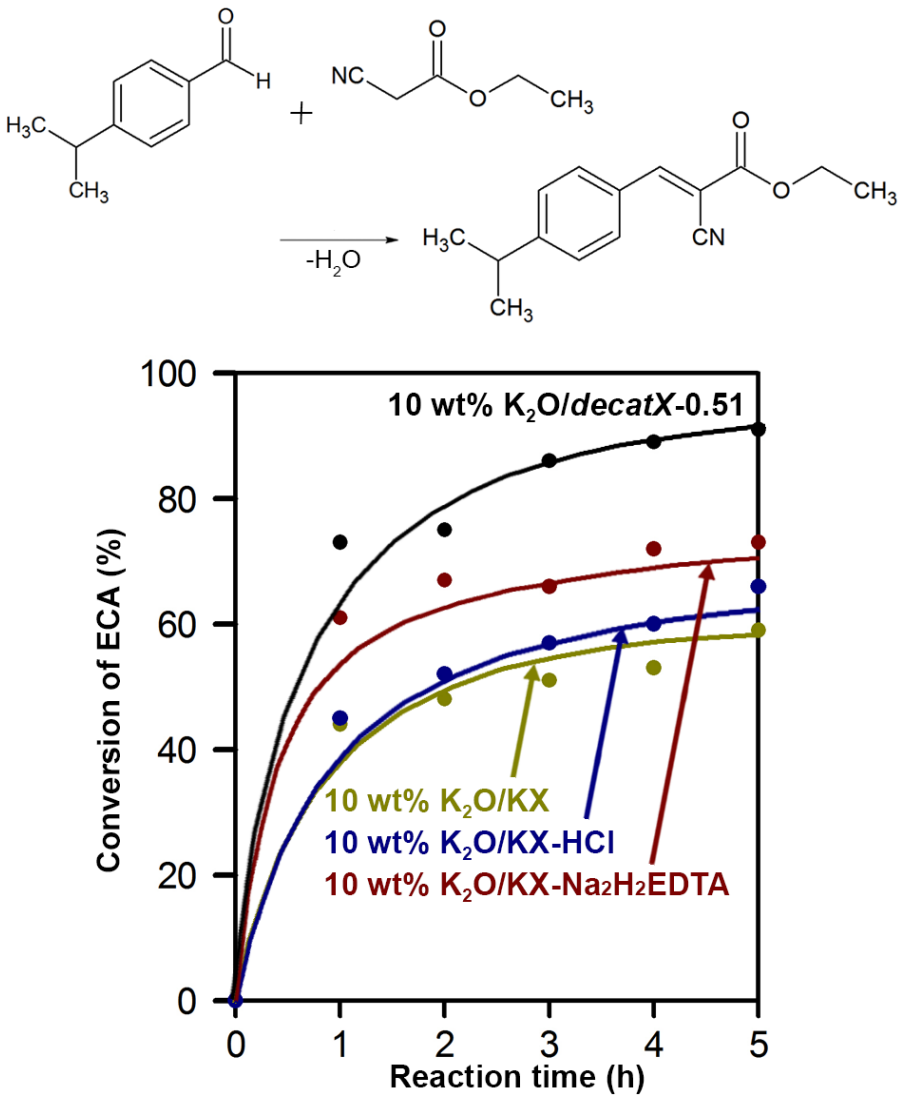

Fig. S8 Conversion of ethyl cyanoacetate in Knoevenagel condensation with 10 wt% K_2O/KX, 10 wt% K_2O/*decatX*-0.51, 10 wt% K_2O/KX-Na_2H_2EDTA and 10 wt% K_2O/KX-HCl as a catalyst. Chemically leached NaX zeolite with Na_2H_2EDTA and HCl were ion-exchanged with excessive amount of K^+ ion (3 g samples were ion-exchanged twice in 200 mL of 0.3 M KNO_3). 1 g of K^+-exchanged samples were impregnated with 3 M of KNO_3 to achieve 10 wt% K_2O. The impregnated samples were dried at 373 K for 24 h and calcined in a plug-flow reactor under flowing dry air (250 mL min^{-1}) at 773 K (temperature ramp: 2 K min^{-1}) for 3 h. The resultant samples were designated as 10 wt% K_2O/KX-Na_2H_2EDTA and 10 wt% K_2O/KX-HCl, respectively.