Electronic Supplementary Information

A Thin Film Sorbent of Layered Organo-MnO_2 for the Extraction of *p*-Aminoazobenzene from Aqueous Solution

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Table S1. Sorbents used for the extraction of various organic species from aqueous solutions.

Sorbent	Modifier	Target	Sorption capacity / mg g^{-1}	Reference
MnO_2	CTA	*p*-AAB	(781)[a]	This study
			217[b]	
		MB	(489)[a]	
			136[b]	
		CR	(1321)[a]	
			368[b]	
MnO_2	CTA	benzoic acid	68	14
Montmorillonite	CTA	MB	227	29
	TDMA[c]	MB	179	
	TMA[d]	MB	173	
Montmorillonite	CTA	CR	351	30
Kaolinite	–	*p*-AAB	2.2	24
Kaolinite	–	azobenzene	11	25
Mesoporous carbon	–	Acid Blue 113	9.2	31

NOTE:

a) The values were based on the electrical charges delivered during electrodeposition and were calculated assuming that the deposited film was composed of pure MnO_2 (FW=86.94). These values were employed in the main text to compare with other MnO_2-based materials such as K-birnessite.

b) For comparison with the data of conventional powdered materials, we re-calculated the masses with reference to the typical components of a CTA/MnO_2 film measured by XPS (Ref. 20); i.e., $CTA_{0.74}MnO_2 \cdot Cl_{0.42}$, FW=225.44.

c) Tetradecyltrimethylammonium.

d) Tetramethylammonium.

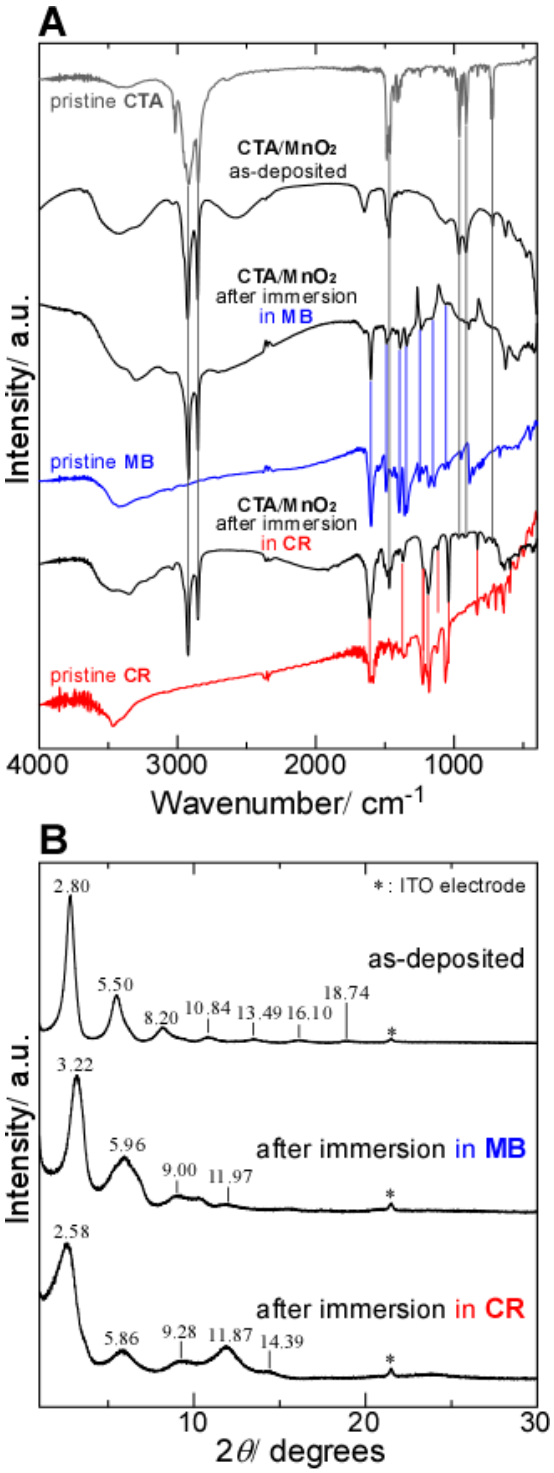

Figure S1. (A) FTIR spectra and (B) XRD patterns of a CTA/MnO_2 film taken before and after immersion for 24 h in MB- and CR-containing solutions, along with FTIR spectra of CTA, MB, and CR reagents in the form of KBr pellets. The film was made by applying an electrical charge of 340 mC cm^{-2}.

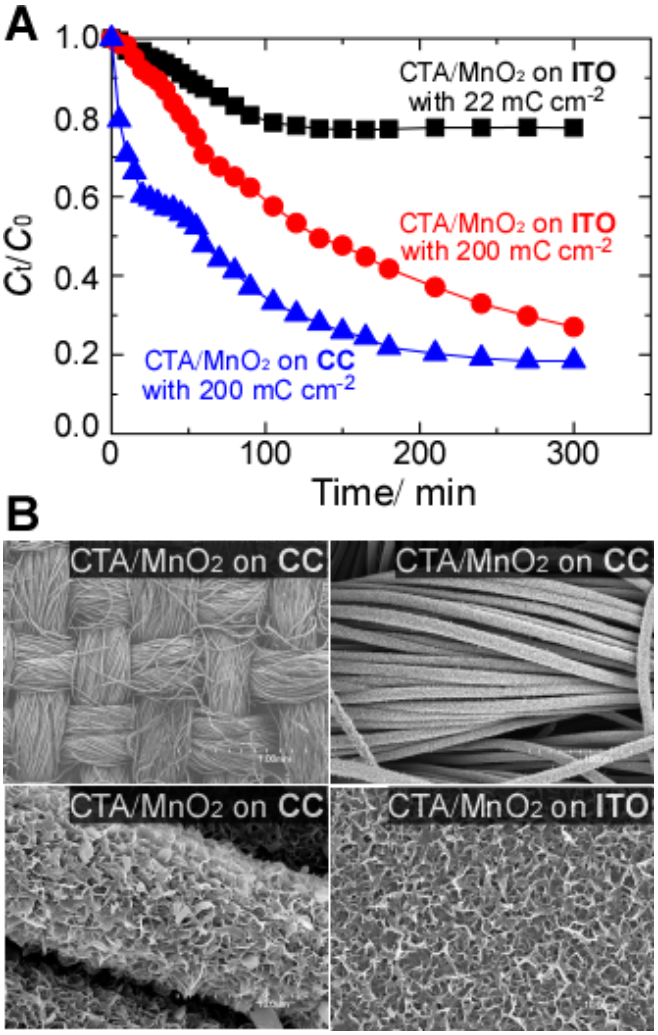

Figure S2. (A) Time course of residual rate of *p*-AAB when ITO- and CC-supported CTA/MnO_2 films were immersed in a *p*-AAB containing solution. The films were made by applying electrical charges of 22 and 200 mC cm^{-2}. (B) FE-SEM images of a CTA/MnO_2 film deposited on ITO and CC electrodes, which were taken using a Hitach S-4700 Y SEM operating at 10 kV.

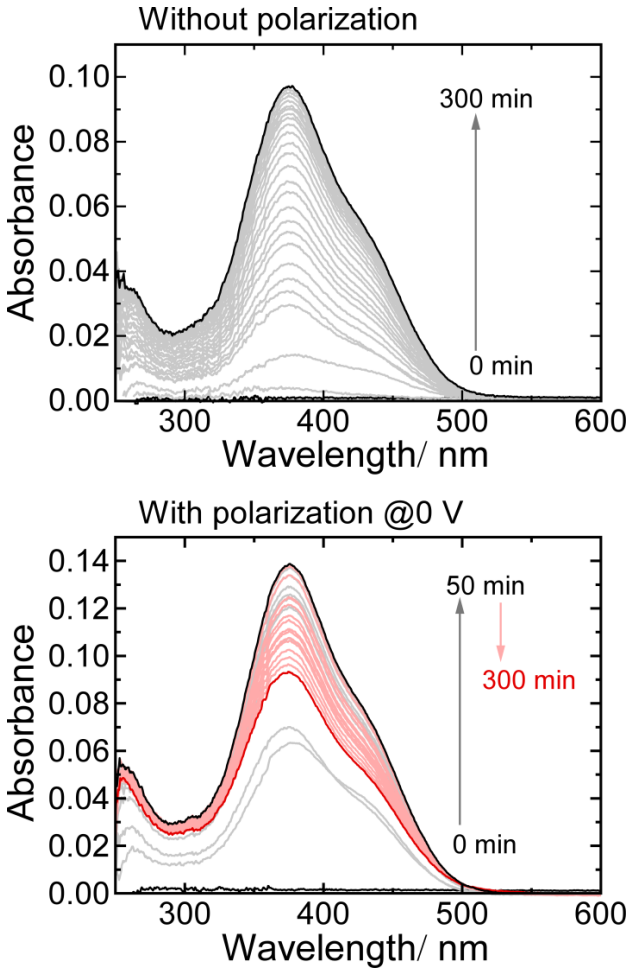

Figure S3. Time courses of the absorption spectra obtained after the p-AAB-sorbed CTA/MnO_2 film was immersed in a 0.1 M Na_2SO_4 solution and kept with and without polarization at 0 V.

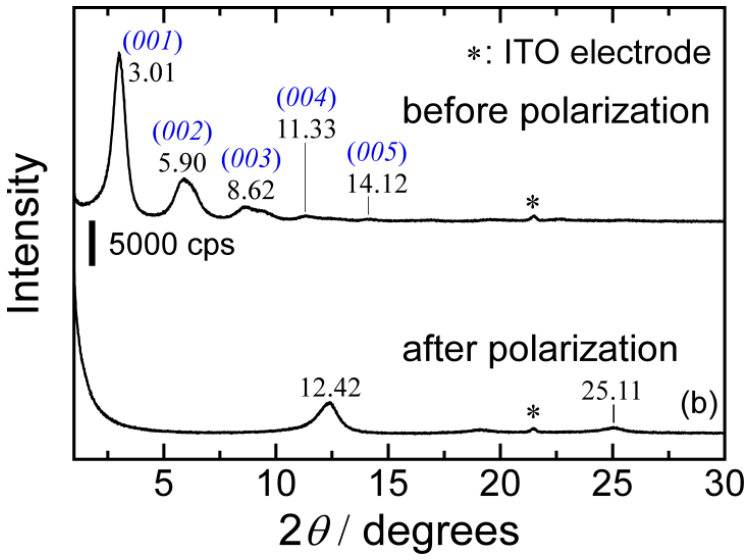

Figure S4. XRD patterns of the *p*-AAB-sorbed CTA/MnO_2 film obtained before and after being polarized for 5h at 0 V in a 0.1 M Na_2SO_4 solution.

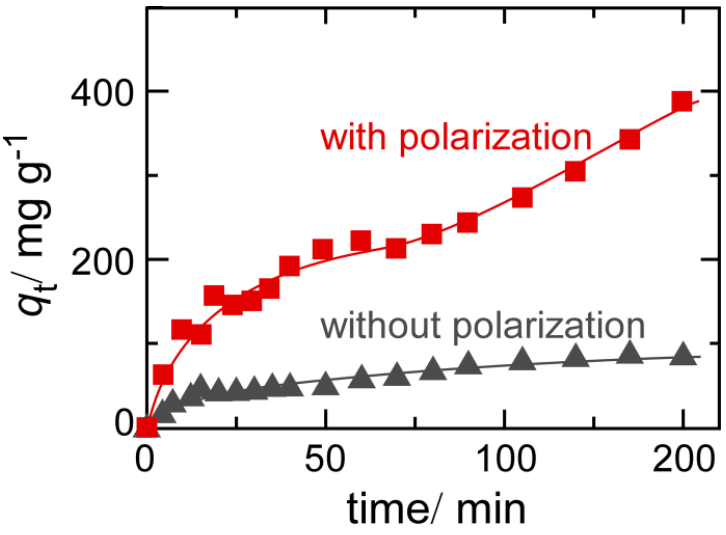

Figure S5. Plots of the sorption amounts of *p*-AAB on K/MnO_2 film obtained when the film was polarized in an aqueous solution containing 0.1 M Na_2SO_4 and 11.6 mg L^{-1} *p*-AAB.