

Supplementary Information

Synthesis of colloidal MnO₂ with sheet-like structure by one-pot plasma discharge in permanganate aqueous solution

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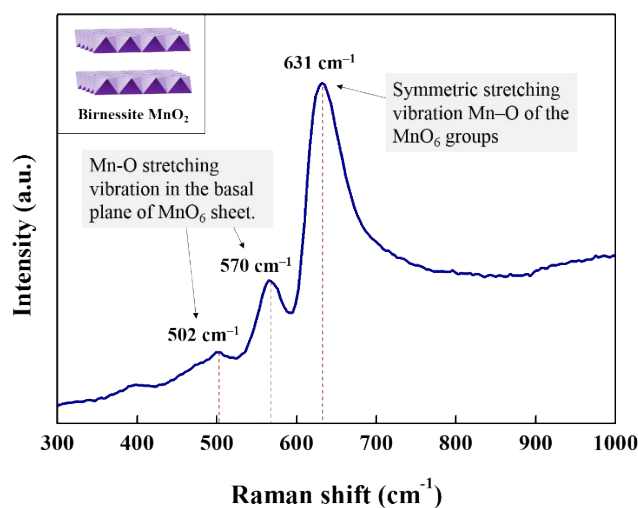


Fig. S1 Raman spectrum of the MnO₂ powder separated from the colloidal MnO₂ by centrifugation.

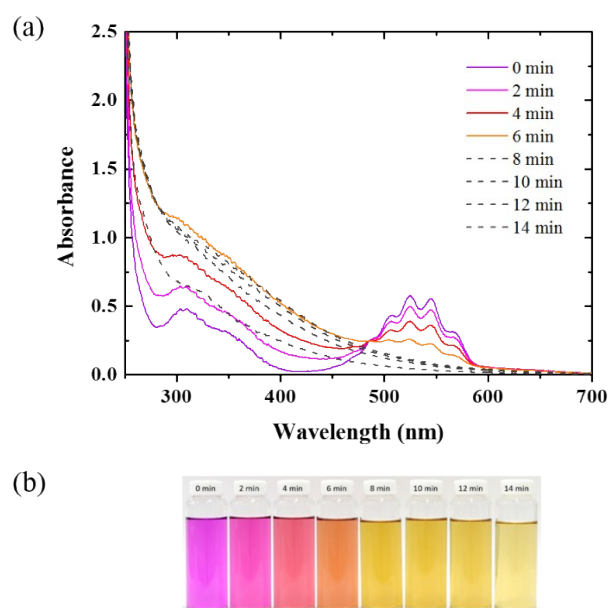


Fig. S2 (a) UV-vis absorption spectra of the SPP treated KMnO_4 aqueous solutions ($\text{pH} = 2$) with discharge times of 0–14 min, along with (b) photograph of the obtained solutions as a function of discharge time.

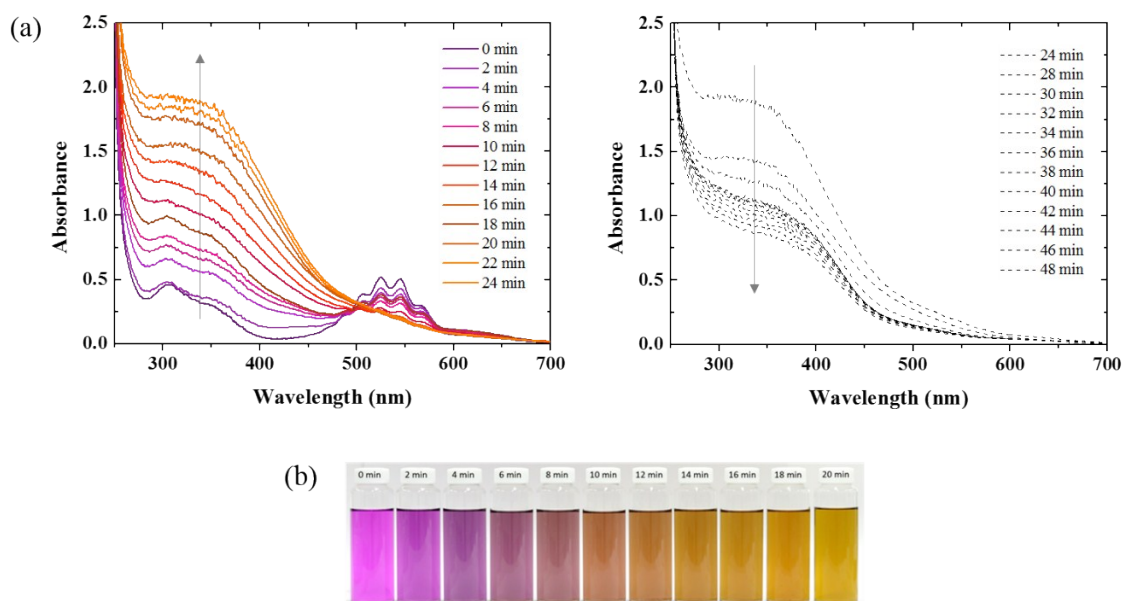


Fig. S3 (a) UV-vis absorption spectra of the SPP treated KMnO_4 aqueous solutions ($\text{pH} = 12$) with discharge times of 0–14 min, along with (b) photograph of the obtained solutions as a function of discharge time.

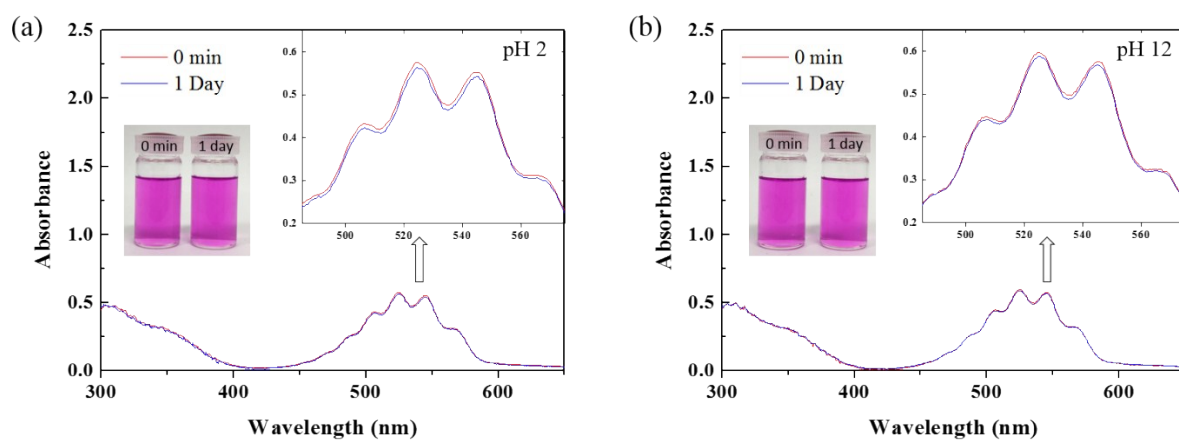


Fig. S4 UV-vis spectra and photographs of the untreated KMnO_4 aqueous solutions of (a) pH = 2, and (b) pH = 12, immediately after sample preparation (0 min) and after the solutions were left for 1 day.

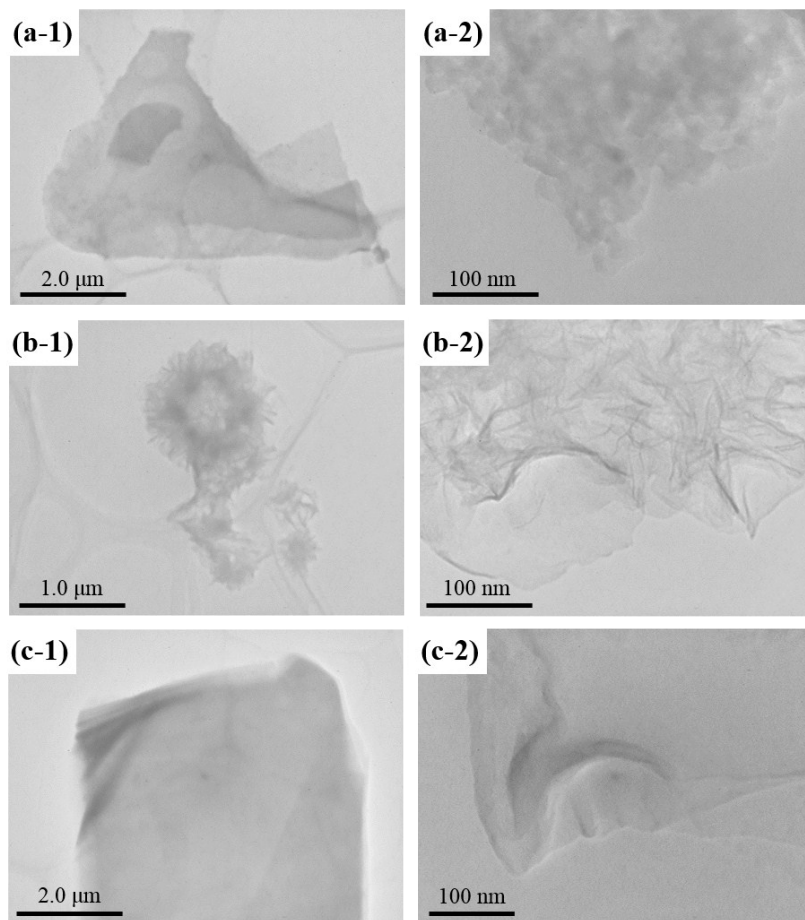


Fig. S5 TEM images of the colloidal MnO_2 synthesized at different pH conditions: (a) 2, (b) 7 and (c) 12, at low and high magnifications.

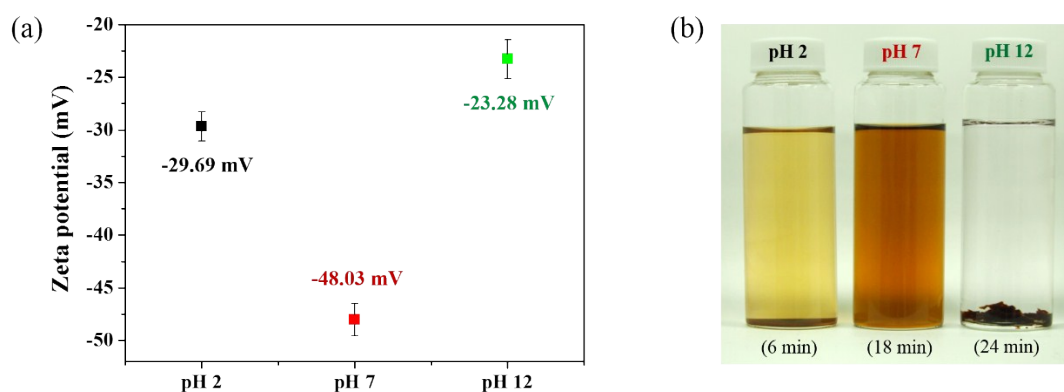


Fig. S6 (a) Zeta potential (after 24 hours) and (b) photographs (after 3 months) of the colloidal MnO_2 synthesized at different pH conditions: 2, 7 and 12.