Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

H_2O_2 activated moxa ash via ball milling for ultrafast removal of mitoxantrone

Wanqian Cai [a], Chongbiao Zhang [a], Yourong Wu [a], Wei Wang [a], Mei Lin [b,**], Tengfei Lin [a], Cong Lin [a], Min Gao [a], Chunlin Zhao [a], Xiao Wu [a,*]

[a] College of Materials Science and Engineering, Fuzhou University, Fuzhou, 350108, China

[b] College of Environment and Resource Science, Fujian Normal University, Fuzhou, 350007, Fujian Province, China

*Corresponding Author at: Institute of Materials Science and Engineering, Fuzhou University New Campus, Minhou College Town, Fuzhou, Fujian 350180, China.

Tel.: +8659122866535; Fax: +8659122866537.

E-mail address: linmei706@fjnu.edu.cn (M. Lin), wuxiao@fzu.edu.cn (X. Wu).

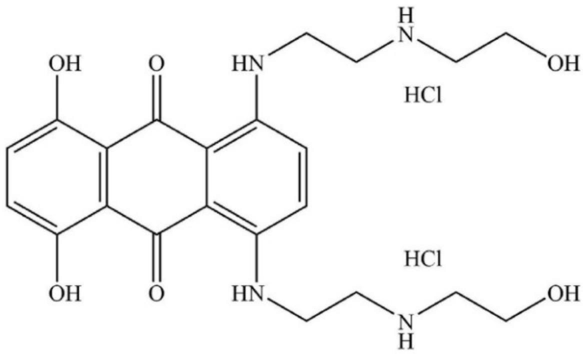

Fig. S1 Chemical structure of mitoxantrone hydrochloride (MTX).

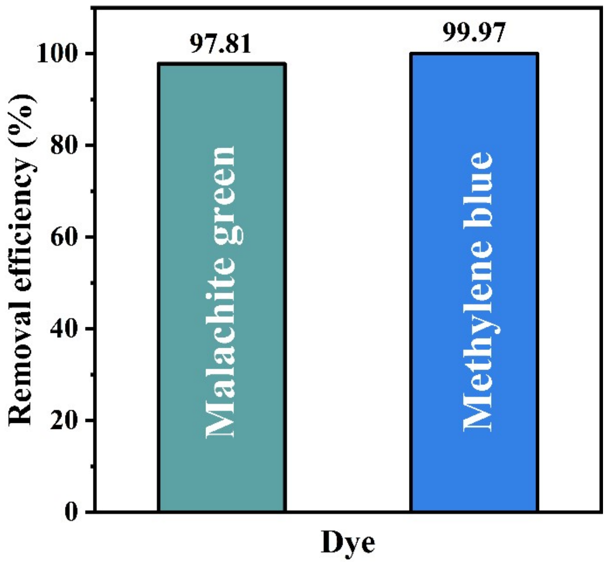

Fig. S2 Removal efficiency of malachite green and methylene blue by BMMA-H_2O_2.

Table S1 Basic morphology characteristics of MA, BMMA, BMMA-H_2O and BMMA-H_2O_2.

Sample	BET surface area (m^2/g)	BJH pore volume (cm^3/g)	BJH pore size (nm)	pH
MA	2.89	0.0072	32.62	10.1
BMMA	10.96	0.0333	20.92	9.7
BMMA-H_2O	48.31	0.1343	16.12	9.5
BMMA-H_2O_2	96.46	0.1801	10.26	9.3

Table S2 Adsorption kinetics parameters for the adsorption of MTX onto MA, BMMA, BMMA-H_2O and BMMA-H_2O_2.

Sample	Pseudo-first order			Pseudo-second order		
	q_e	k_1	R^2	q_e	k_2	R^2
MA	33.2871	0.1383	0.8426	35.2707	0.006	0.9315
BMMA	38.6825	0.2074	0.9685	40.1468	0.0102	0.9960
BMMA -H_2O	39.1463	0.3132	0.9934	40.1176	0.0202	0.9995
BMMA-H_2O_2	39.7082	4.1179	0.9998	39.8182	1.1538	0.9999

Table S3 Adsorption isotherm parameters for the adsorption of MTX onto MA, BMMA, BMMA-H_2O and BMMA-H_2O_2.

Sample	Langmuir			Freundlich		
	K_L	Q_m	R^2	K_F	n	R^2
MA	0.0295	355.0203	0.9201	26.7795	0.5169	0.9868
BMMA	0.7415	259.5376	0.8695	87.8421	0.3077	0.9903
BMMA -H_2O	1.8812	249.7822	0.8568	97.8981	0.2838	0.9768
BMMA-H_2O_2	4.7906	259.7557	0.8553	126.0242	0.2325	0.9293