Supporting Information

Porous Cr_2O_3 bead with 3D continuous pore architecture: synthesis and its catalytic performances for decomposition of ammonium perchlorate

Dakang Wang, Yanqiu Jiang*, Yinghui Hu, Dongyu Hao, Yulin Yang*, Ruiqing Fan, Debin Xia, Kaifeng Lin

MIIT Key Laboratory of Critical Materials Technology for New Energy Conversion and Storage, School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin 150001, PR China

* Corresponding authors, e-mail: ylyang@hit.edu.cn and jiangyanqiu@hit.edu.cn

Table S1

The products of Cr_2O_3 beads synthesized via various conditions.

Entry.	Symbol	$C_{(K_2Cr_2O_7)}$/mol•L^{-1}	Calcination temperature/℃
1	0.05 M-Cr_2O_3-MPB	0.05	750
2	0.1 M-Cr_2O_3-MPB	0.1	750
3	0.2 M-Cr_2O_3-MPB (750 ^oC-Cr_2O_3-MPB)	0.2	750
4	0.4 M-Cr_2O_3-MPB	0.4	750
5	450 ^oC-Cr_2O_3-MPB	0.2	450
6	550 ^oC-Cr_2O_3-MPB	0.2	550
7	Commercial Cr_2O_3	—	—

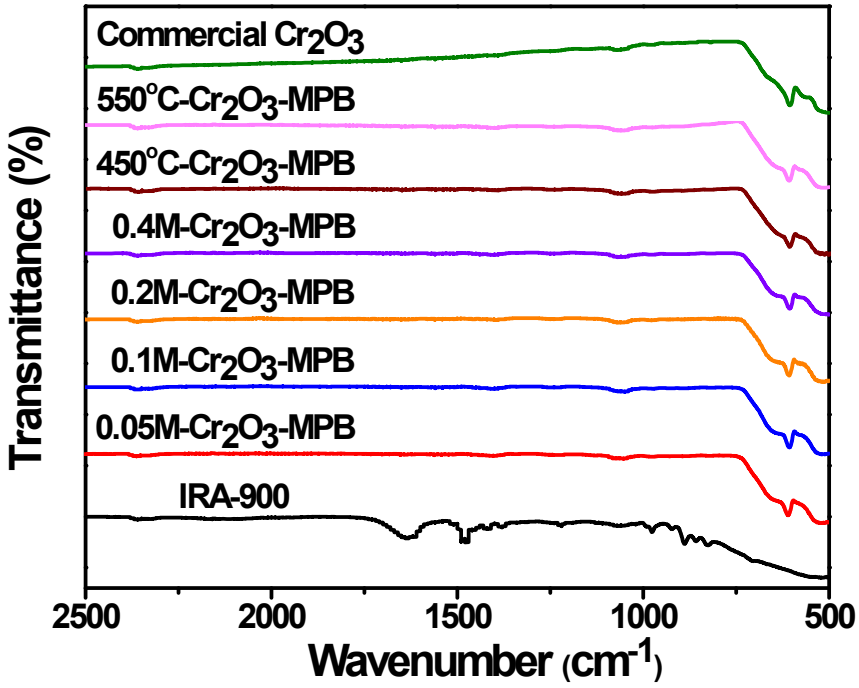

Fig. S1 FT-IR spectra of IRA-900 commercial Cr_2O_3 and synthesized Cr_2O_3-MPB materials.

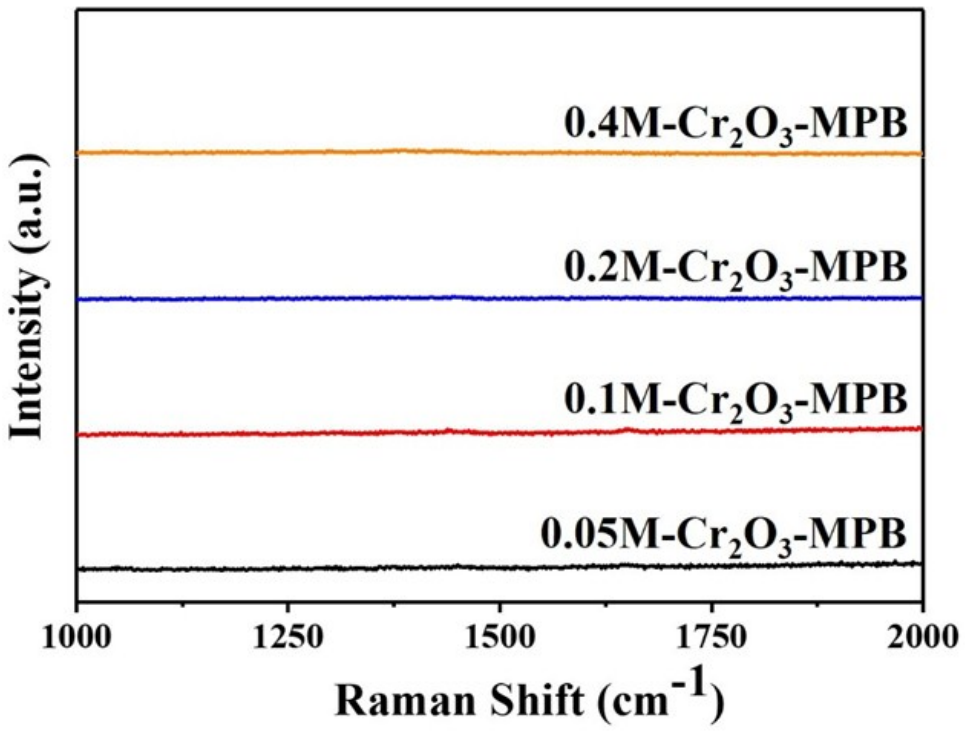

Fig. S2 Raman spectra of 0.05 M-Cr_2O_3-MPB, 0.1 M-Cr_2O_3-MPB, 0.2 M-Cr_2O_3-MPB and 0.4 M-Cr_2O_3-MPB. The spectra were measured at 532 nm laser wavelength.

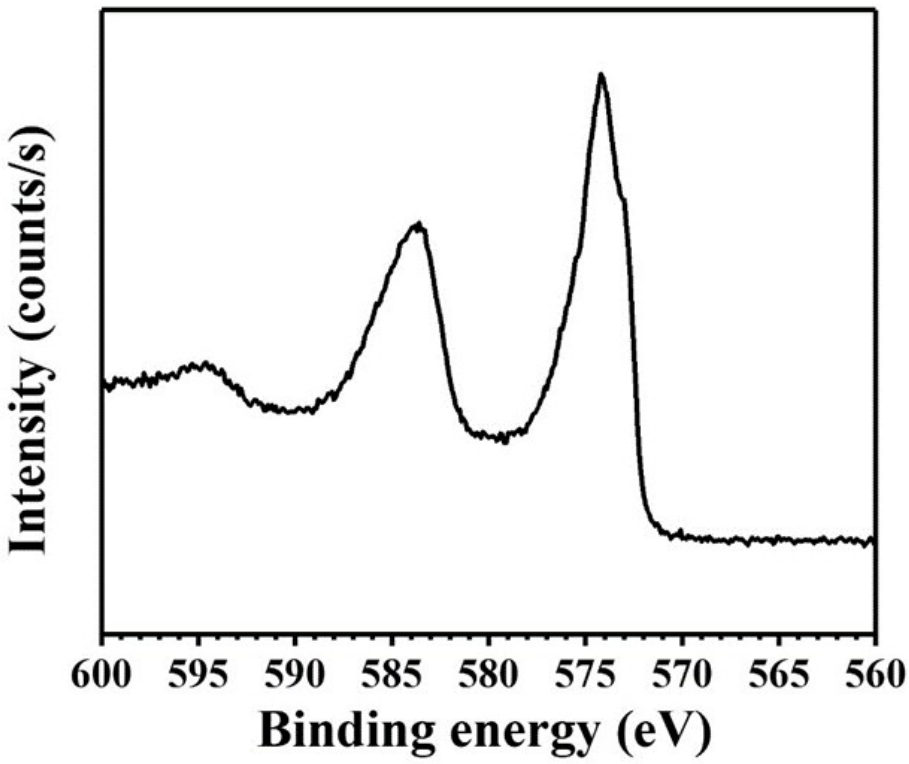

Fig. S3 XPS spectrum of 0.2 M-Cr_2O_3-MPB. The instrument (ESCALAB 250Xi, ThermoFisher) was used for the analysis.

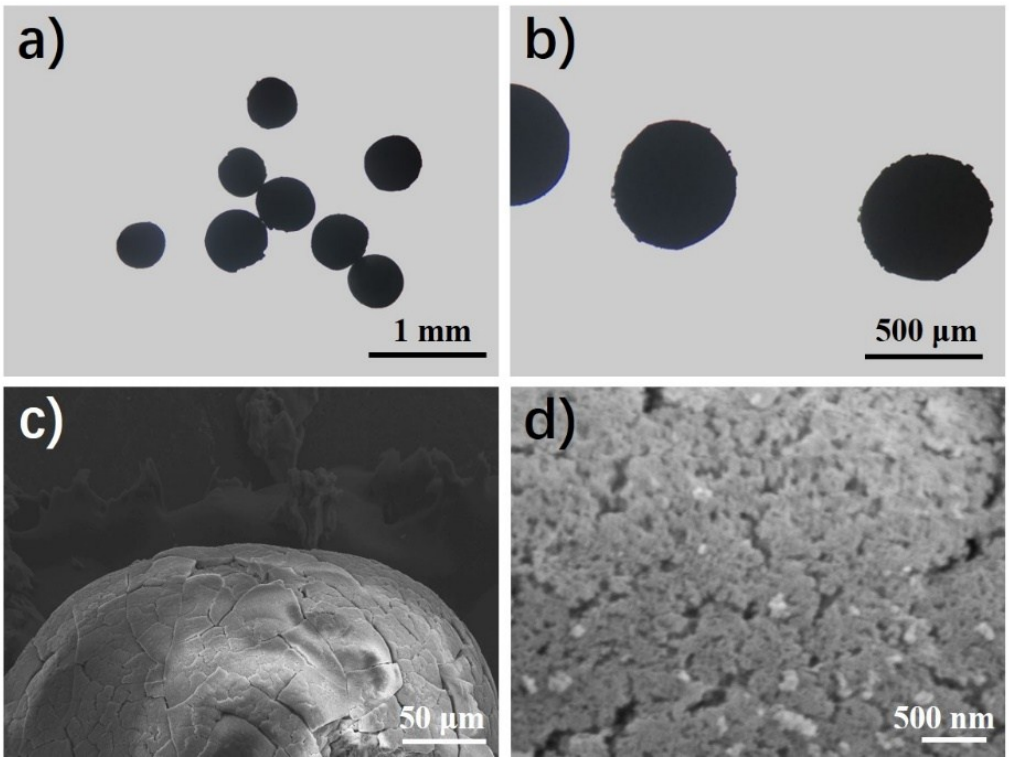

Fig. S4 a) and b) Microscopic images of 0.2 M-Cr_2O_3-MPB with different magnification; c) and d) SEM image of the surface of 0.2 M-Cr_2O_3-MPB.

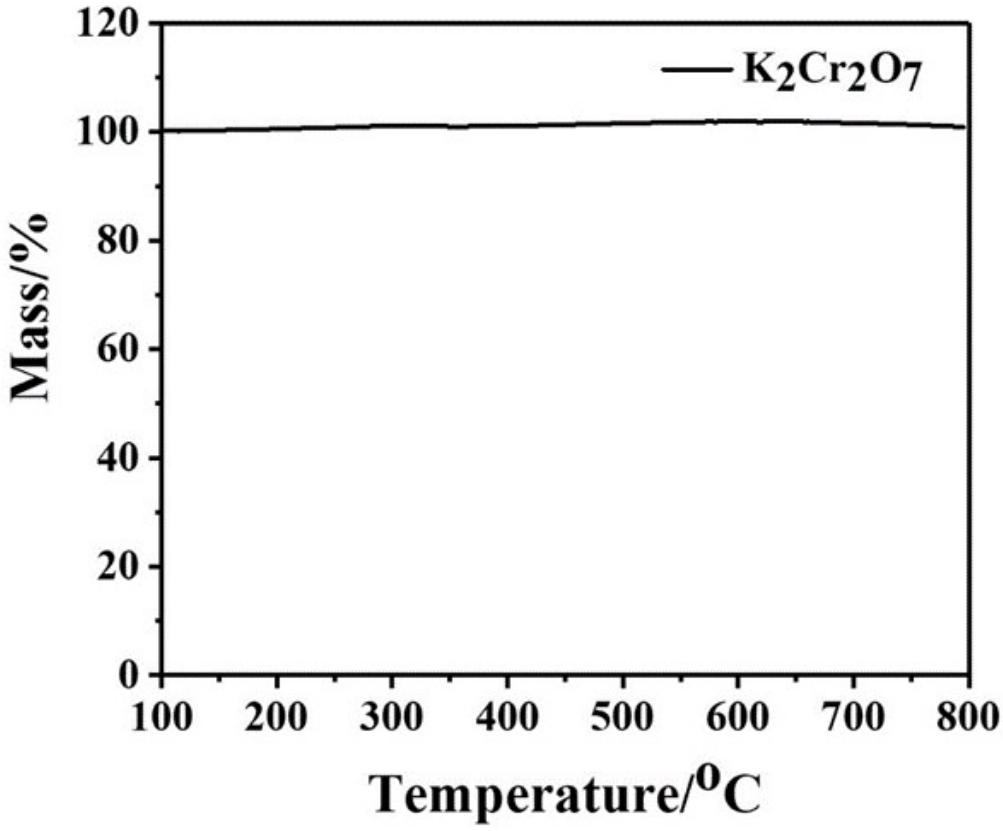

Fig. S5 TG curve of $K_2Cr_2O_7$ powders in air atmosphere.

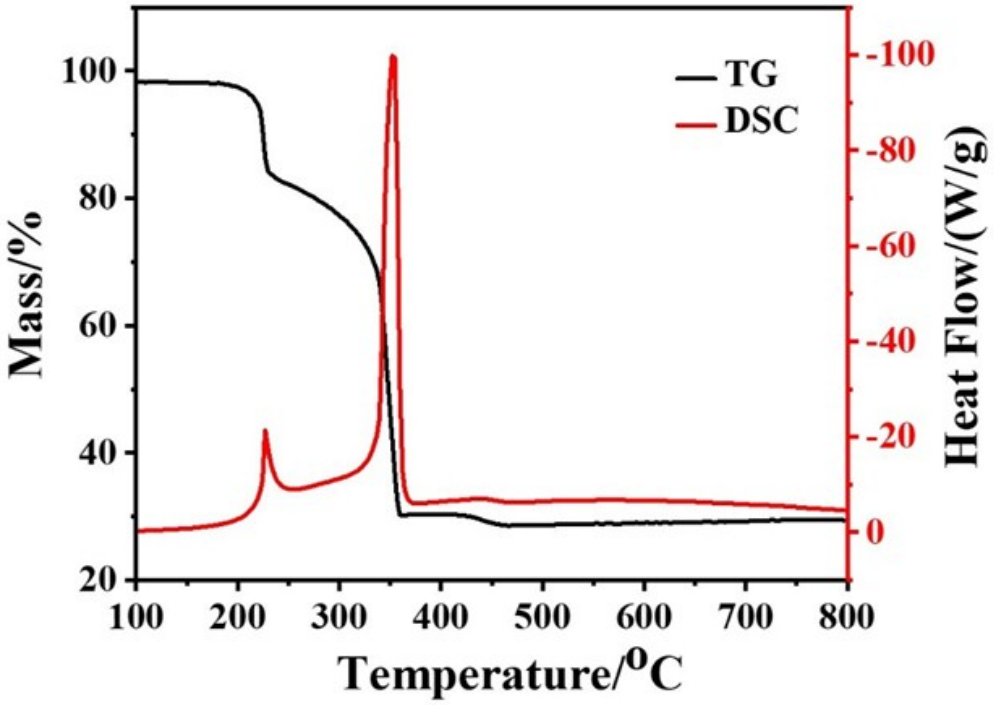

Fig. S6 TG-DSC curves of IRA-900 resin beads containing $Cr_2O_7^{2-}$ anions in air atmosphere.

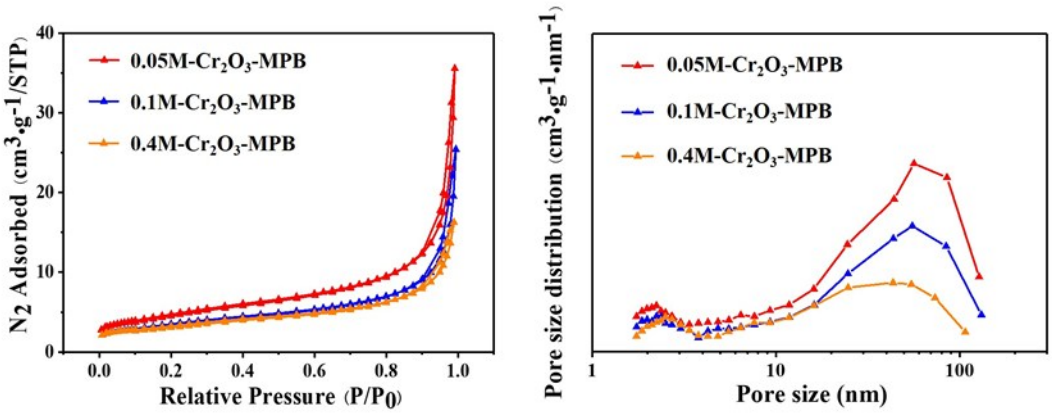

Fig. S7 Nitrogen adsorption-desorption isotherms and the homologous pore size distribution curves of series of Cr_2O_3-MPB materials.

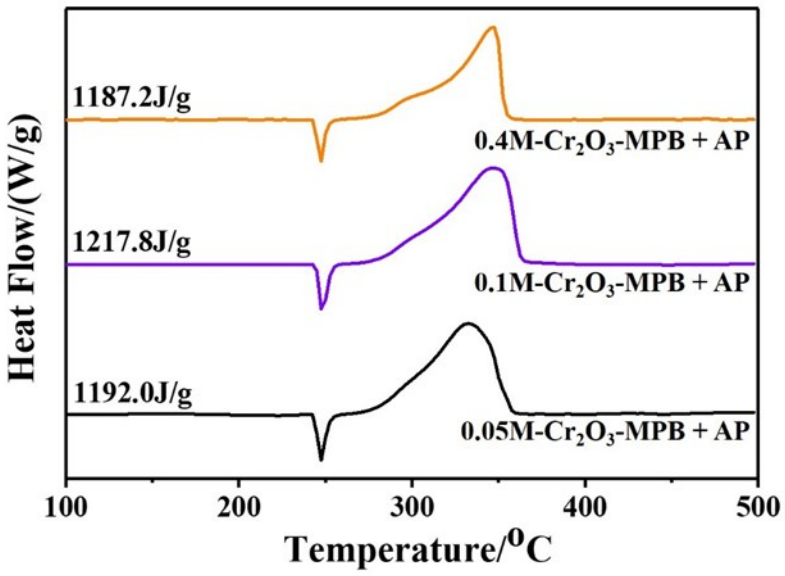

Fig. S8 DSC curves of mixtures of AP and series of Cr_2O_3-MPB materials.

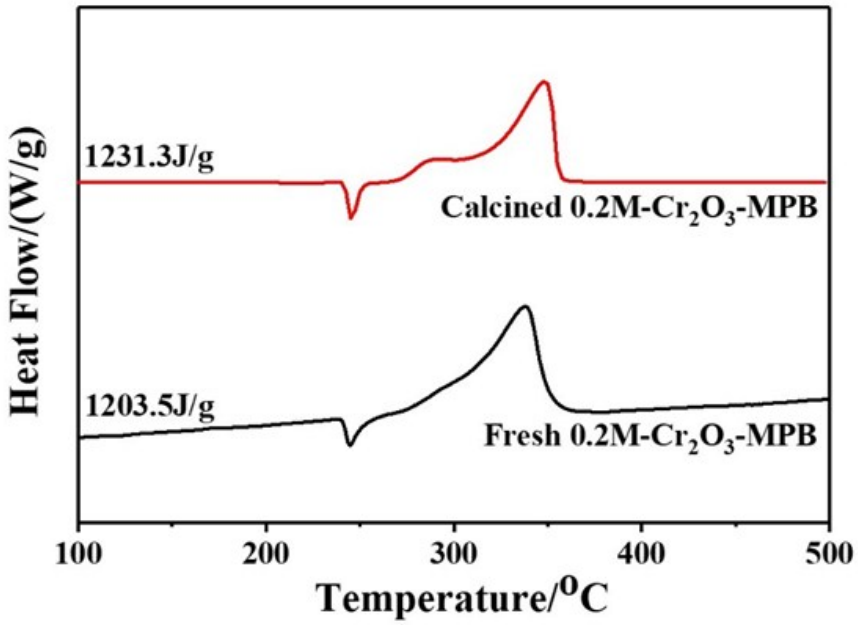

Fig. S9 DSC curves of mixtures of AP and fresh/calcined 0.2 M-Cr_2O_3-MPB.

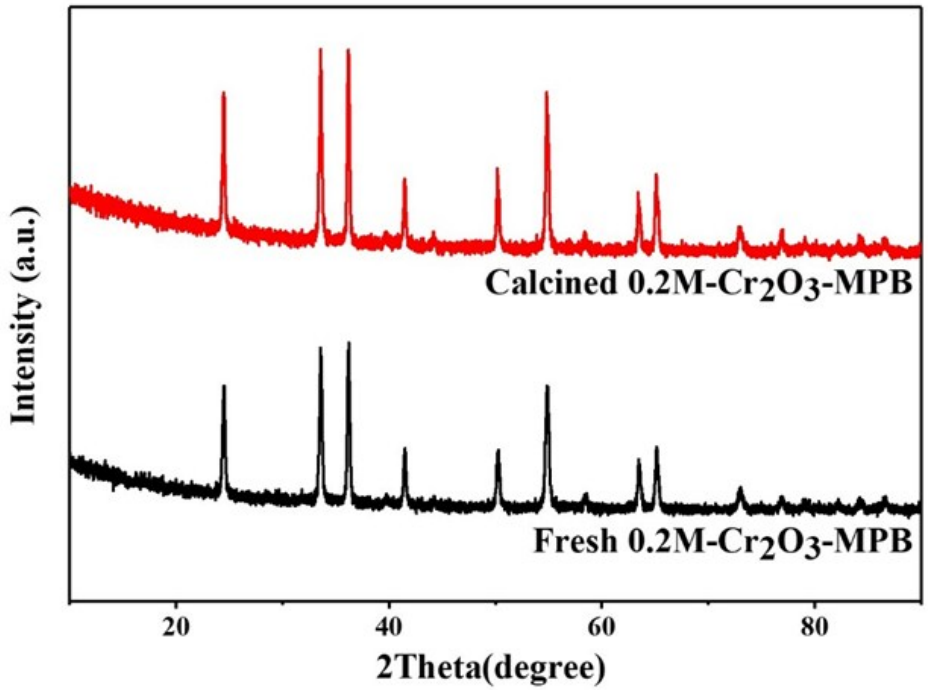

Fig. S10 XRD patterns of fresh and calcined 0.2 M-Cr_2O_3-MPB.

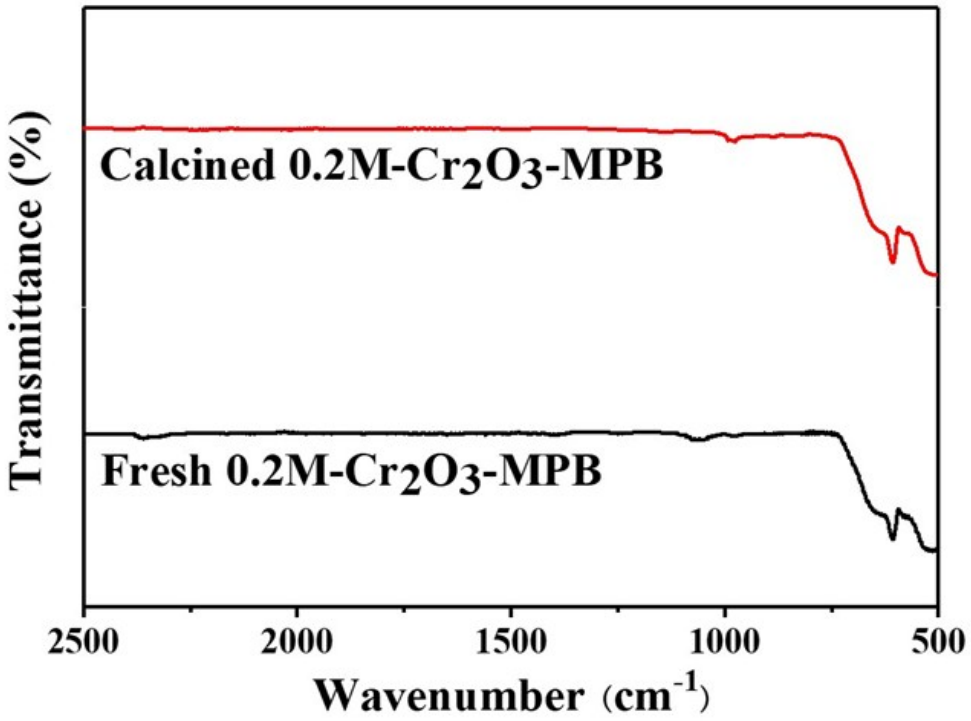

Fig. S11 FT-IR spectra of fresh and calcined 0.2 M-Cr_2O_3-MPB.