Synthesis of a core-shell magnetic Fe_3O_4-NH_2@PmPD nanocomposite for efficient removal of Cr(VI) from aqueous medium

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† Supplementary information (SI) available: The chemical structure of PmPD and the mass ratio for Cr(VI) and the N-based group are presented.

‡ Hongshan Zhu and Jin Wu contributed equally to this paper.

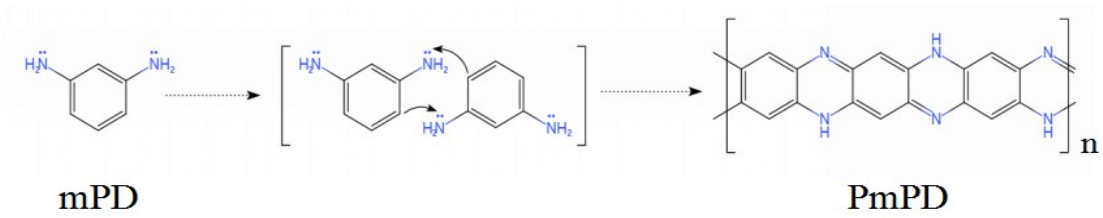
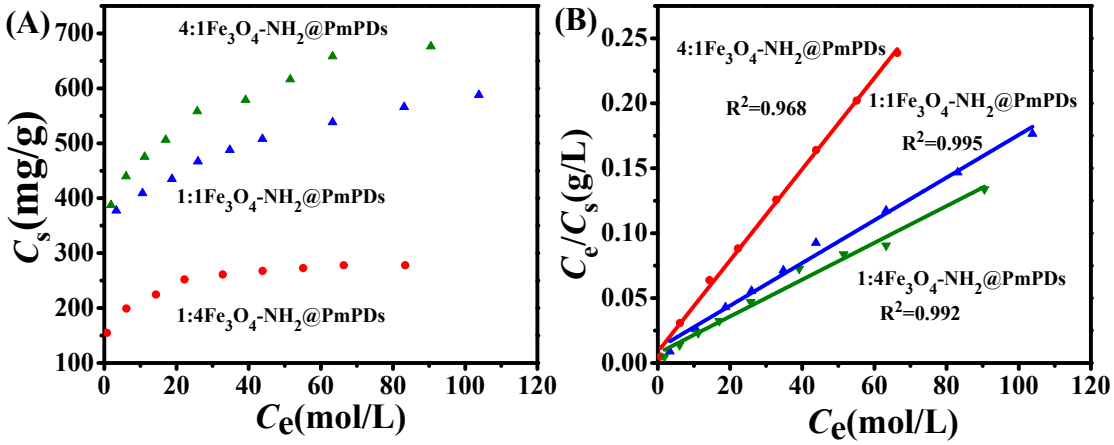


Fig. S1. The chemical structure of mPD and PmPD.

The calculated process for the mass of N

According to the mass ratios of the Fe and N (8.2, 2.6 and 1.2 for 4:1Fe_3O_4-NH_2@PmPDs, 1:1Fe_3O_4-NH_2@PmPDs, and 1:4Fe_3O_4-NH_2@PmPDs, respectively), the mass fraction of the N-based group on the Fe_3O_4-NH_2@PmPDs can be obtained, which is shown in the Table S1. Where *w*(N) is the mass fraction of N on the adsorbents; the *w*(-N=) is the mass fraction of benzenoid amine groups (-N=) on the adsorbents; the *w*(-NH-) is the mass fraction of quinoid imine groups *w*(-NH-) on the adsorbents. *m*(Cr) is the mass of Cr adsorbed on the adsorbents. *m*(N) is the mass of N on the adsorbents. The adsorption isotherms of Cr(VI) on various Fe_3O_4-NH_2@PmPDs and the simulations with Langmuir for 4:1Fe_3O_4-NH_2@PmPDs, 1:1Fe_3O_4-NH_2@PmPDs, 1:1Fe_3O_4-NH_2@PmPDs have been shown in Fig. S2. The correlation coefficients (R^2) of the Langmuir model indicats that the Langmuir model could satisfactory depict the adsorption process. Then the mass fractions of Cr(VI) adsorbed on Fe_3O_4-NH_2@PmPDs were also investigated shown in Table S1.



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2 Fig. S2. The adsorption isotherms of Cr(VI) on various Fe_3O_4-NH_2@PmPDs (A) and

3 the simulations with Langmuir (B). T=313 K.

4 **Table S1**

5 The mass fraction of the N-based group on the Fe_3O_4-NH_2@PmPDs

Adsorbents	$m_{(Fe)}$:$m_{(N)}$	C_{smax}(mg/g)	$m_{(Cr)}$:$m_{(N)}$	$m_{(Fe)}$:$m_{(N)}$	$w_{(N)}$	$w_{(-N=)}$	$w_{(-NH-)}$
4:1Fe_3O_4-NH_2@PmPDs	8.2	285	3.86	8.2	7.38%	0.89%	6.50%
1:1Fe_3O_4-NH_2@PmPDs	2.6	610	3.65	2.6	16.71%	2.01%	14.70%
1:4Fe_3O_4-NH_2@PmPDs	1.2	689	2.79	1.2	24.68%	2.96%	21.72%

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