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BET

The pore structure and specific surface area of $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO were analyzed via nitrogen adsorption-desorption isotherms and pore size distributions (Fig. S1). By calculation, the specific surface area of $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO was 109.63 $m^2 \cdot g^{-1}$, and the pore diameter of it was mainly concentrated in 4.0 nm and 9.1 nm. The obtained results showed that $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO had a large specific surface area, and its surface pore structure was mainly mesoporous structure.

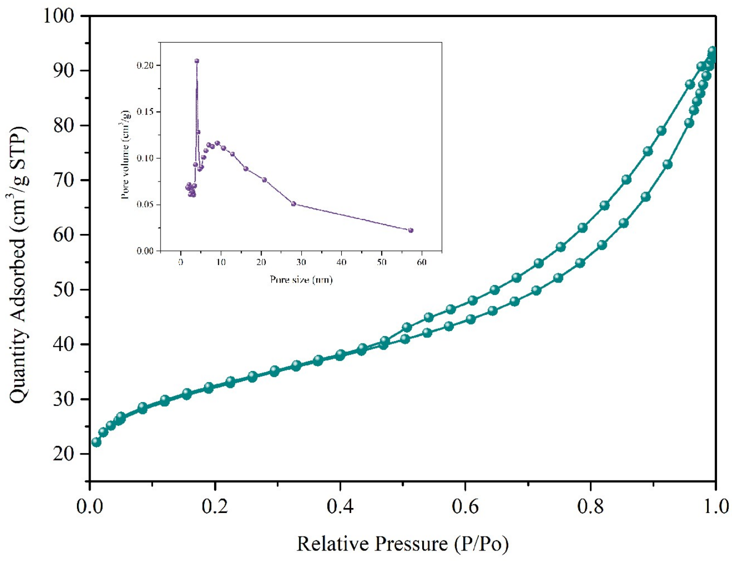

Fig. S1 N_2 adsorption-desorption isotherms spectrum of $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO.

VSM

VSM were performed to evaluate the magnetic property of the as-prepared nanocomposites at room temperature. The hysteresis loops of pure $Zn_{0.5}Ni_{0.5}Fe_2O_4$ and $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO nanocomposites were shown in Fig. S2. Both pure $Zn_{0.5}Ni_{0.5}Fe_2O_4$ and $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO were superparamagnetic because the magnetization of both two became almost zero when the magnetic field approaches zero[1]. The saturation magnetization of $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO was 55.42 emu·g^{-1}, which was lower than that of pure $Zn_{0.5}Ni_{0.5}Fe_2O_4$ (64.73 emu·g^{-1}), but its magnetic property was still suitable and sufcient for the needs of magnetic separation. Compared with pure $Zn_{0.5}Ni_{0.5}Fe_2O_4$, the magnetization values of $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO reduced by 9.31 emu·g^{-1}, which was mainly due to the existence of nonmagnetic S, N-GO.

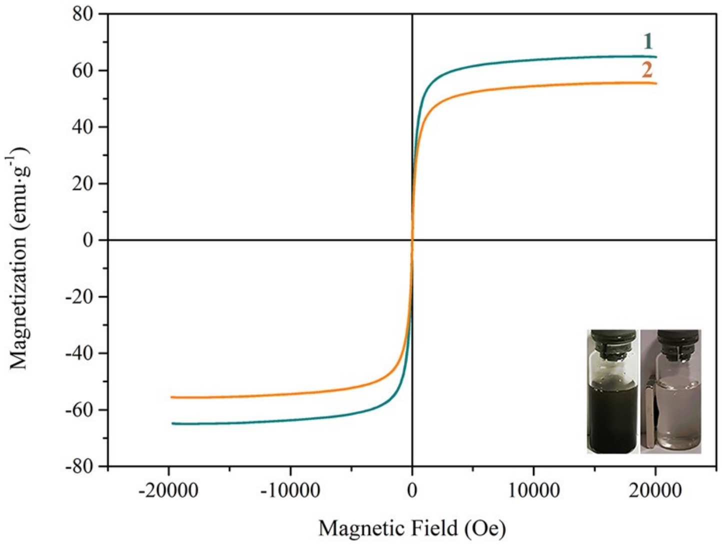

Fig. S2 The magnetization curves of $Zn_{0.5}Ni_{0.5}Fe_2O_4$ (1) and $Zn_{0.5}Ni_{0.5}Fe_2O_4$-S, N-GO (2).

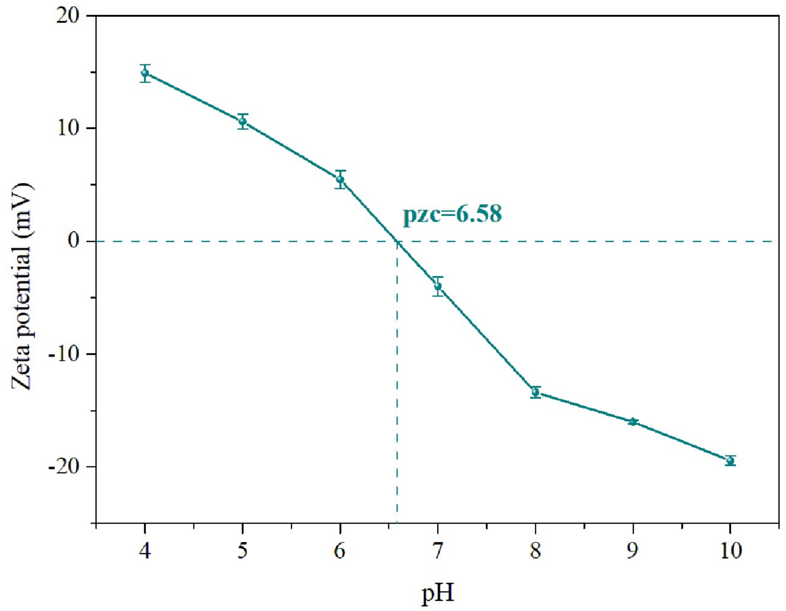

Fig. S3 The zeta potentials of DTC-Chm-GO.