Supporting Information for

A new "on-off-on" g-C$_3$N$_4$ nanosheets fluorescent sensor for 5-Br-PADAP and Co$^{2+}$ under acidic condition

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Fig. S1 The $^1$H NMR spectrum comparison of 5-Br-PADAP before (up) and after (down) adding cobalt ions (insert: chemical structure of 5-Br-PADAP before and after adding cobalt ions).

Fig. S2 The FT-IR spectrum comparison of 5-Br-PADAP before (up) and after (down) combining cobalt ions.

Fig. S3 The HRMS spectra of (5-Br-PADAP)$_2$-Co$^{2+}$.

Fig. S4 The effect of the addition order of Co$^{2+}$ on the fluorescence intensity of 5-Br-PADAP-g-C$_3$N$_4$ nanosheets, mixing 5-Br-PADAP (15 μM), g-C$_3$N$_4$ nanosheets (12 μg/mL) first and then Co$^{2+}$ (2 μM) (a), mixing 5-Br-PADAP, Co$^{2+}$ first and then g-C$_3$N$_4$ nanosheets (b).

Fig. S5 Effect of the 5-Br-PADAP concentration on the fluorescence intensity change ($\Delta F$: $F_1$-$F$) value (g-C$_3$N$_4$ nanosheets, 12 μg/mL and Co$^{2+}$, 10 μM).

Fig. S6 Effect of reaction time of Co$^{2+}$ on the fluorescence of 5-Br-PADAP-g-C$_3$N$_4$ nanosheets (g-C$_3$N$_4$ nanosheets, 12 μg/mL, 5-Br-PADAP, 15 μM and Co$^{2+}$, 10 μM).

Fig. S7 Effect of coexisting ions on the fluorescence of 5-Br-PADAP-g-C$_3$N$_4$ nanosheets (g-C$_3$N$_4$ nanosheets, 12 μg/mL, 5-Br-PADAP, 15 μM and metal ions, 10 μM).
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Fig. S2 The FT-IR spectrum comparison of 5-Br-PADAP before (up) and after (down) combining cobalt ions.
**Fig. S3** The HRMS spectra of (5-Br-PADAP)$_2$-Co$^{2+}$.

**Fig. S4** The effect of the addition order of Co$^{2+}$ on the fluorescence intensity of 5-Br-PADAP-g-C$_3$N$_4$ nanosheets, mixing 5-Br-PADAP (15 μM), g-C$_3$N$_4$ nanosheets (12 μg/mL) first and then Co$^{2+}$ (2 μM) (a), mixing 5-Br-PADAP, Co$^{2+}$ first and then g-C$_3$N$_4$ nanosheets (b).
**Fig. S5** Effect of the 5-Br-PADAP concentration on the fluorescence intensity change ($\Delta F$: $F_1 - F$) value (g-$C_3N_4$ nanosheets, 12 $\mu$g/mL and Co$^{2+}$, 10 $\mu$M).

**Fig. S6** Effect of reaction time of Co$^{2+}$ on the fluorescence of 5-Br-PADAP-g-$C_3N_4$ nanosheets (g-$C_3N_4$ nanosheets, 12 $\mu$g/mL, 5-Br-PADAP, 15 $\mu$M and Co$^{2+}$, 10 $\mu$M).
Fig. S7 Effect of coexisting ions on the fluorescence of 5-Br-PADAP-g-C₃N₄ nanosheets (g-C₃N₄ nanosheets, 12 μg/mL, 5-Br-PADAP, 15 μM and metal ions, 10 μM).