**SUPPLEMENTARY INFORMATION**

**Fig. S1** Absorption spectra of TC (~4.0×10⁻⁵ M) in aqueous solution at pH 2.3 (A), 5.0 (B), 9.0 (C) and 11 (D) alone and in the presence of increasing amount of Mg(ClO₄)₂ up to 0.374 (A), 1.11 (B), 0.015 (C) and 0.015 (D) M concentrations.
Fig. S2 Quantitative absorption spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Mg$^{2+}$ in aqueous solution at pH 2.3 (A), 5.0 (B), 9.0 (C) and 11 (D).
Fig. S3 Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Mg$^{2+}$ in aqueous solution at pH 2.3 (A), 5.0 (B), 9.0 (C) and 11 (D) obtained by Global Analysis of the absorption titrations.
**Fig. S4** Fluorescence spectra of TC in aqueous solutions at pH 2.3 (A), 5.0 (B), 9.0 (C) and 11 (D) alone and in the presence of increasing amount of Mg(ClO$_4$)$_2$ up to 0.038 (A), 0.416 (B), 0.015 (C) and 0.015 (D) M concentrations ($\lambda_{\text{exc}}=\lambda_{\text{isosbestic}}$=357 (A), 355 (B), 404 (C) and 398 (D) nm).
Fig. S5 Emission spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Mg$^{2+}$ in aqueous solution at pH 2.3 (A), 5.0 (B), 9.0 (C) and 11 (D).
Fig. S6 Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Mg$^{2+}$ in aqueous solution at pH 5.0 (B), 9.0 (C) and 11 (D) obtained by Global Analysis of the fluorescence titrations.
**Fig. S7** Absorption spectra of TC ($4.0 \times 10^{-5}$ M) in aqueous solution at pH 2.3 (A) and 5.0 (B) alone and in the presence of increasing amount of CaCl$_2$ up to 0.15 (A) and 0.017 (B) M concentrations.

![Absorption spectra](image)

**Fig. S8** Quantitative absorption spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Ca$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B).

![Quantitative absorption spectra](image)

**Fig. S9** Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Ca$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B) obtained by Global Analysis of the absorption titrations.

![Concentration profiles](image)
**Fig. S10** Fluorescence spectra of TC in aqueous solutions at pH 2.3 (A) and 5.0 (B) alone and in the presence of increasing amount of CaCl$_2$ up to 0.037 (A) and 0.017 (B) M concentrations ($\lambda_{\text{exc}}=\lambda_{\text{isosbestic}}=360$ (A) and 370 (B) nm).

**Fig. S11** Emission spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Ca$^{2+}$ in aqueous solution at pH 5.0.
**Fig. S12** Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Ca$^{2+}$ in aqueous solution at pH 5.0 obtained by Global Analysis of the fluorescence titration.

**Fig. S13** Absorption spectra of TC (4.0×10$^{-5}$ M) in aqueous solution at pH 2.3 (A) and 5.0 (B) alone and in the presence of increasing amount of CuCl$_2$·H$_2$O up to 0.0042 (A) and 0.00059 (B) M concentrations.
Fig. S14 Quantitative absorption spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Cu$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B).

Fig. S15 Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Cu$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B) obtained by Global Analysis of the absorption titrations.
**Fig. S16** Fluorescence spectra of TC in aqueous solutions at pH 2.3 (A) and 5.0 (B) alone and in the presence of increasing amount of CuCl$_2$$\Theta$H$_2$O up to 0.004 (A) and 0.00036 (B) M concentrations ($\lambda_{exc}=\lambda_{isosbestic}=358$ (A) and 365 (B) nm).

**Fig. S17** Emission spectra of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Cu$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B).
Fig. S18 Concentration profiles of TC (full lines) and its 1:1 (dashed lines) and 1:2 (dotted lines) complexes with Cu$^{2+}$ in aqueous solution at pH 2.3 (A) and 5.0 (B) obtained by Global Analysis of the fluorescence titrations.