

**Fluorescent macrocyclic probes with pendant functional groups as
markers of acidic organelles within live cells**

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Supporting Information

Spectroscopic characterization of compounds.....	S2
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Microscopic characterization of compounds.....	S13

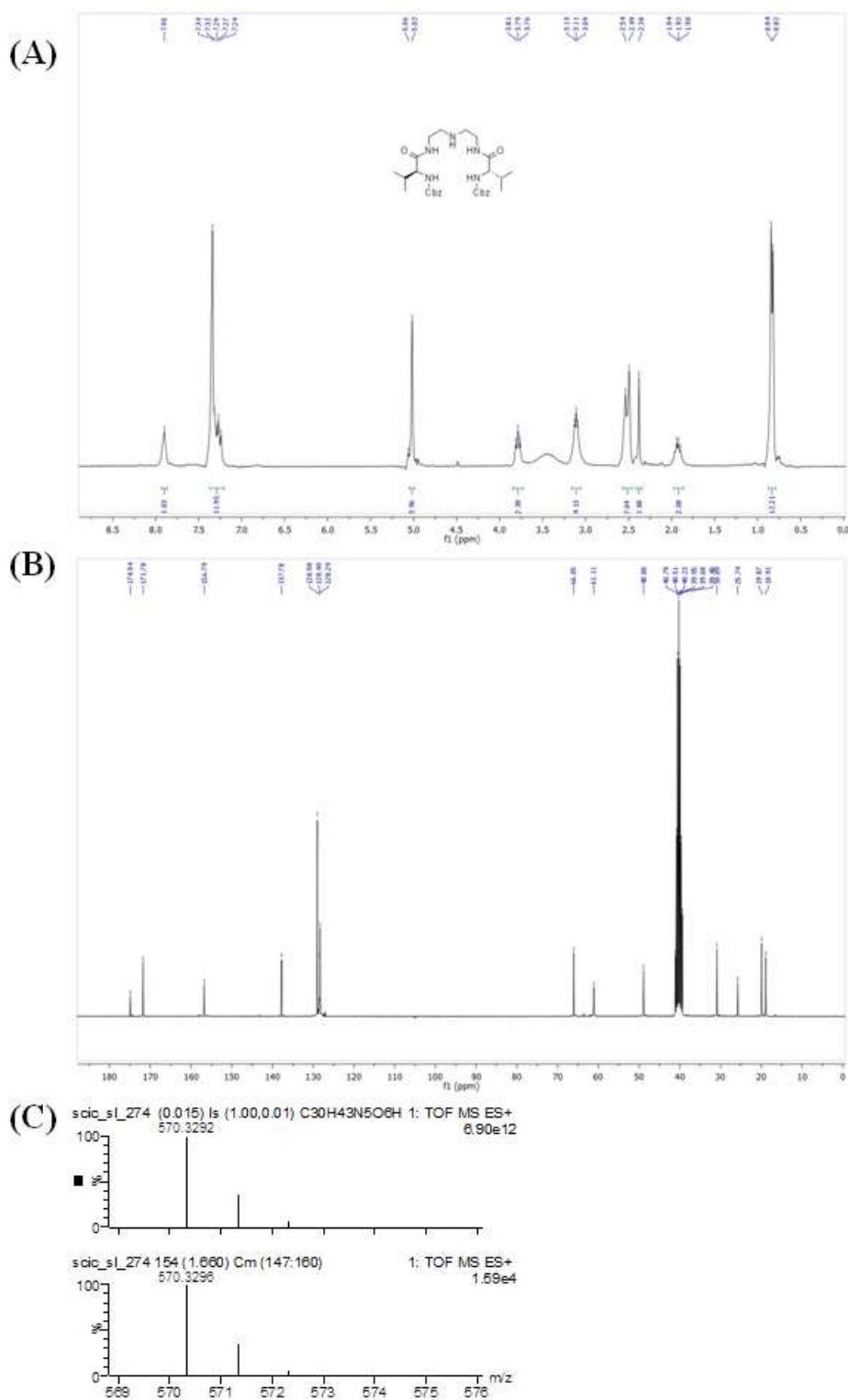


Figure S-1. A) ^1H NMR spectrum of compound **8** in $\text{DMSO-}d_6$. B) ^{13}C NMR spectrum of compound **8** in $\text{DMSO-}d_6$. C) ESI-TOF spectrum of compound **8** and simulated pattern for $[\text{M}+\text{H}]^+$.

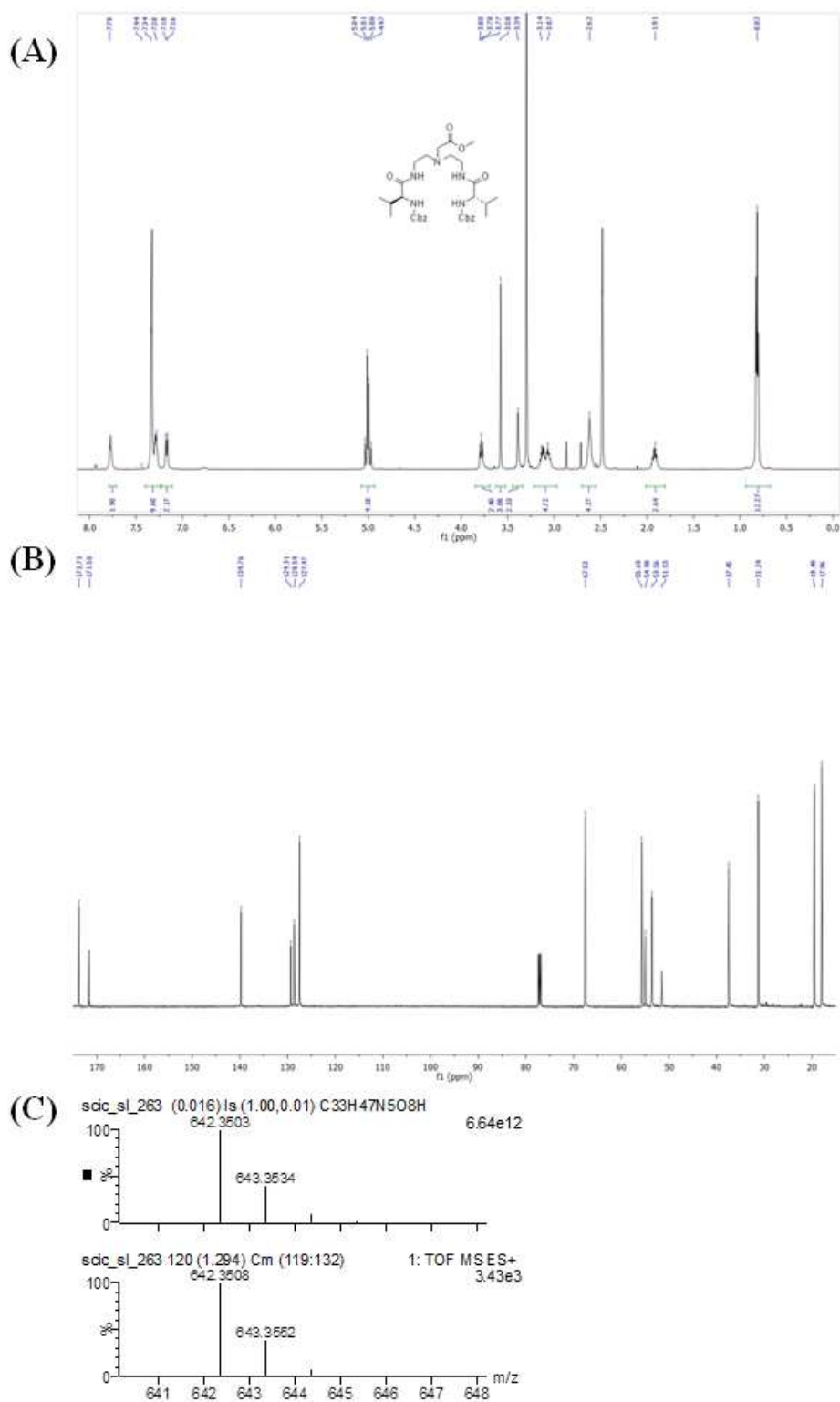
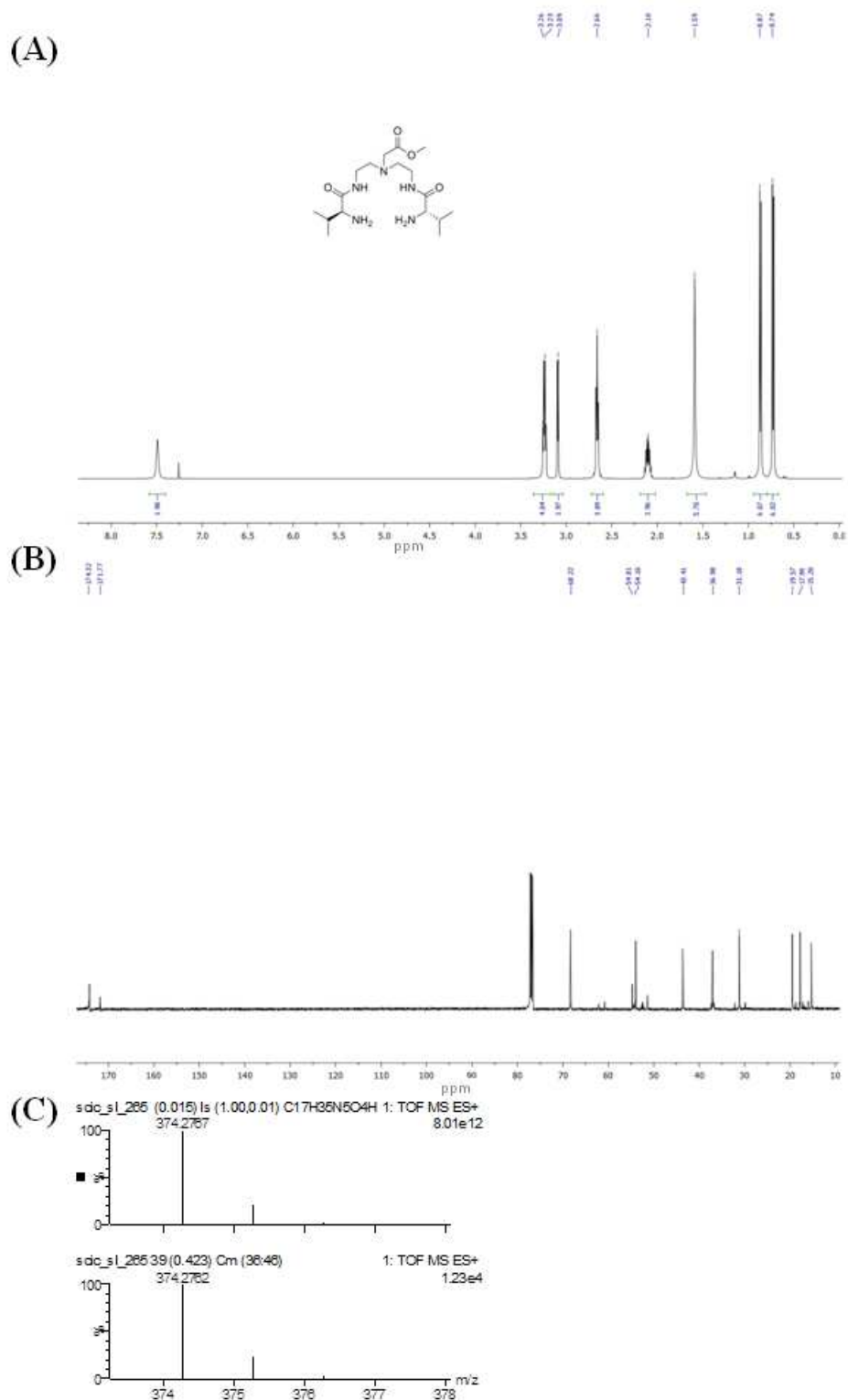


Figure S-2. A) ^1H NMR spectrum of compound **9** in $\text{DMSO}-d_6$. B) ^{13}C NMR spectrum of compound **9** in CDCl_3 . C) ESI-TOF spectrum of compound **9** and simulated pattern for $[\text{M}+\text{H}]^+$.



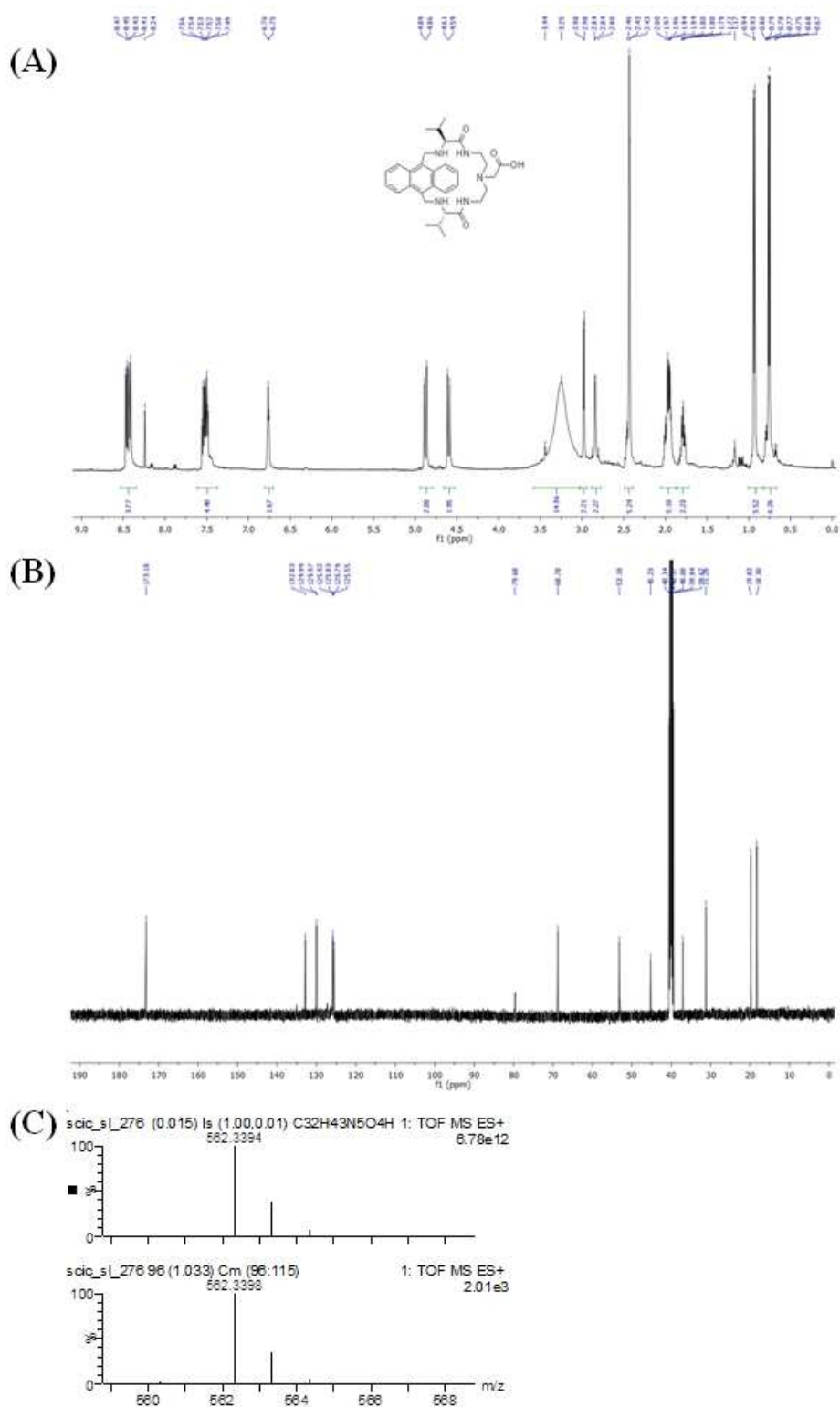
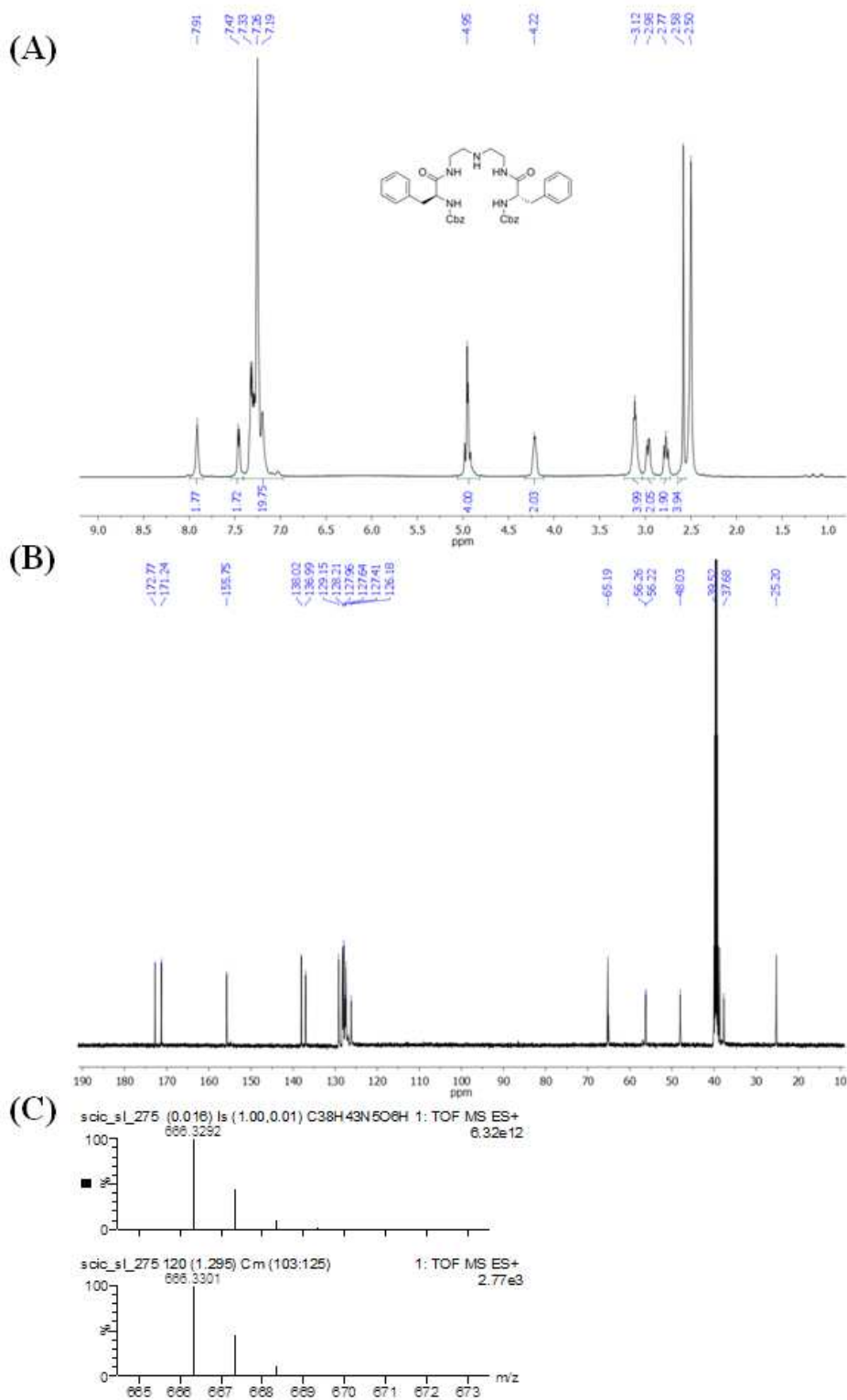
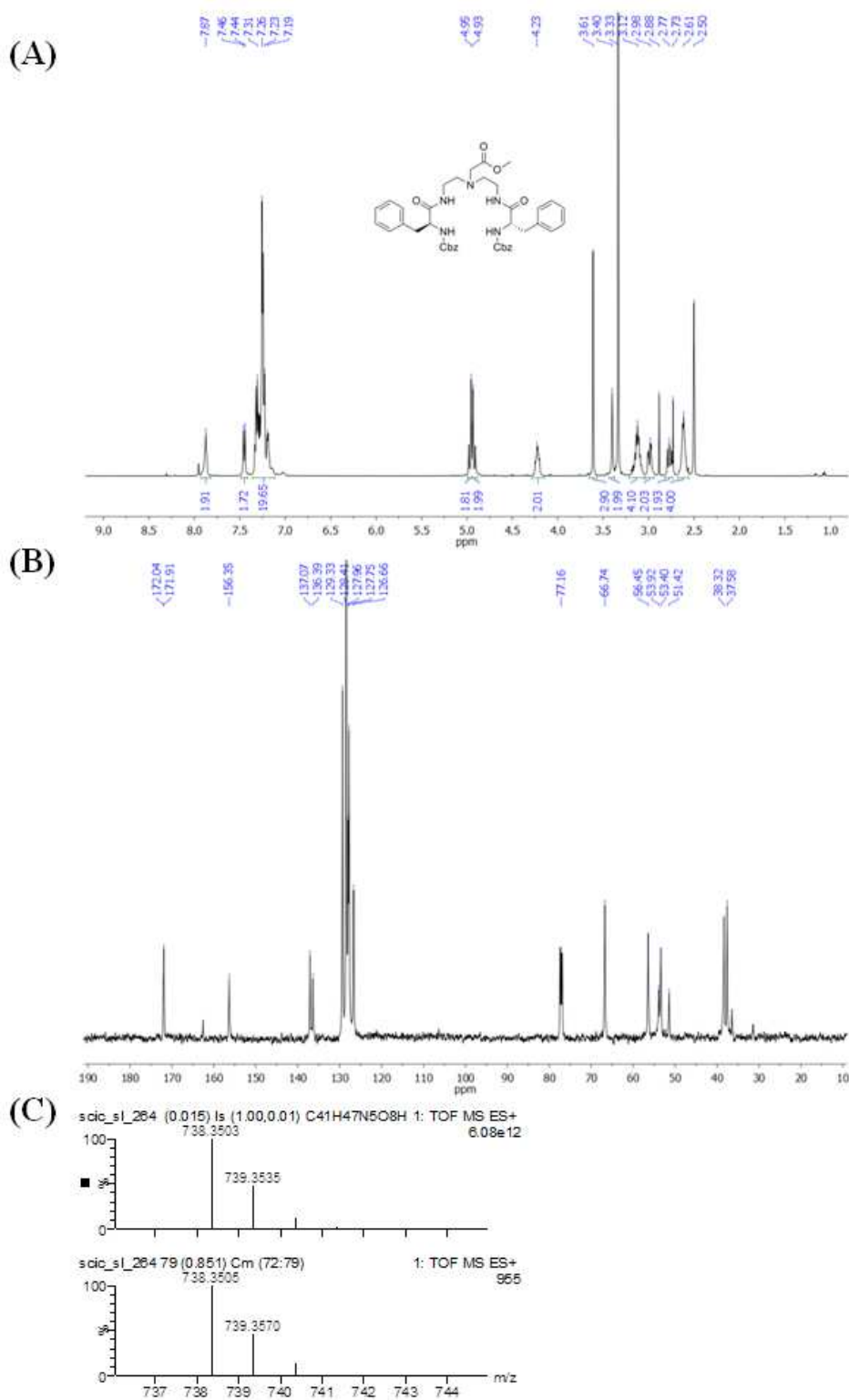
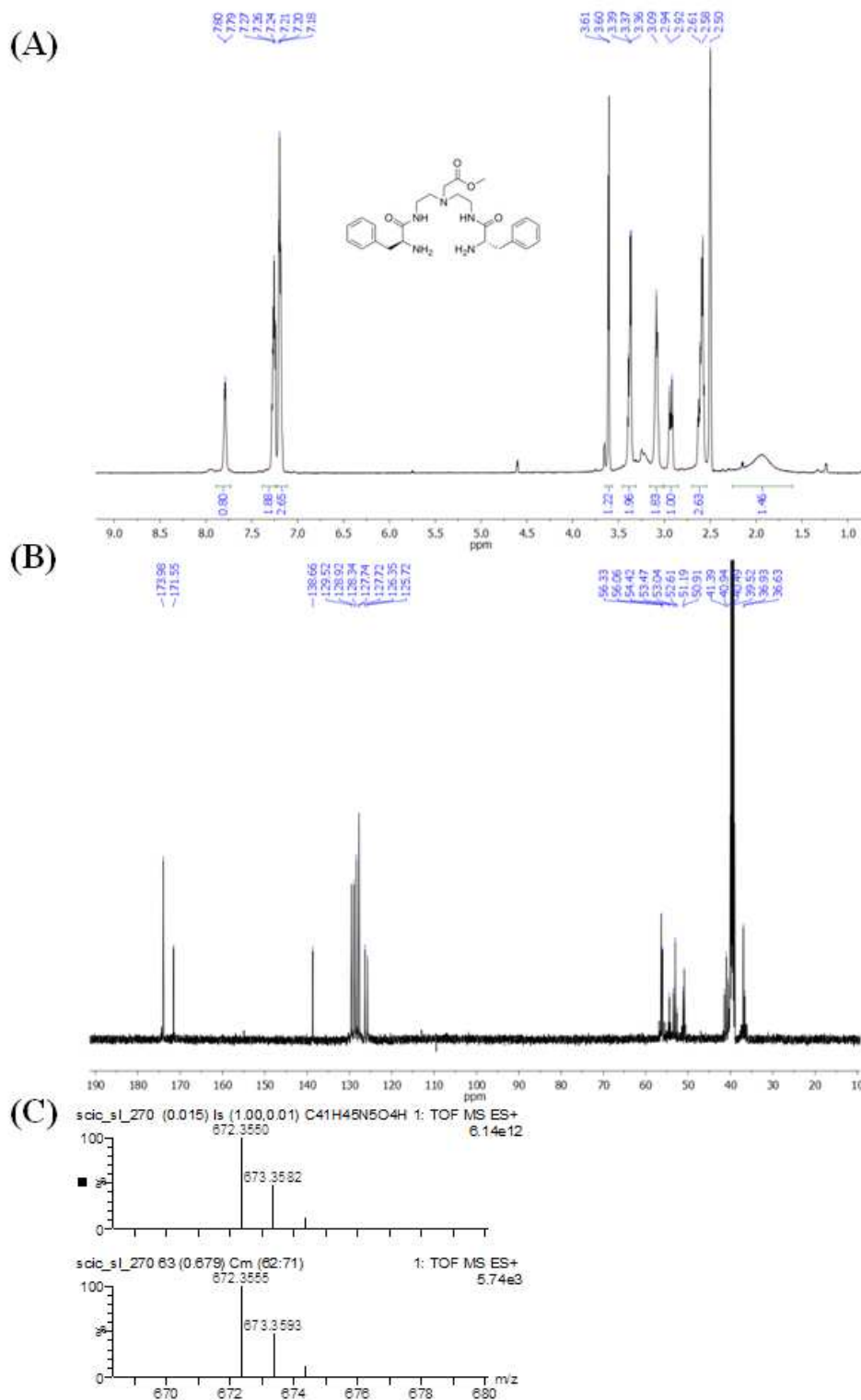
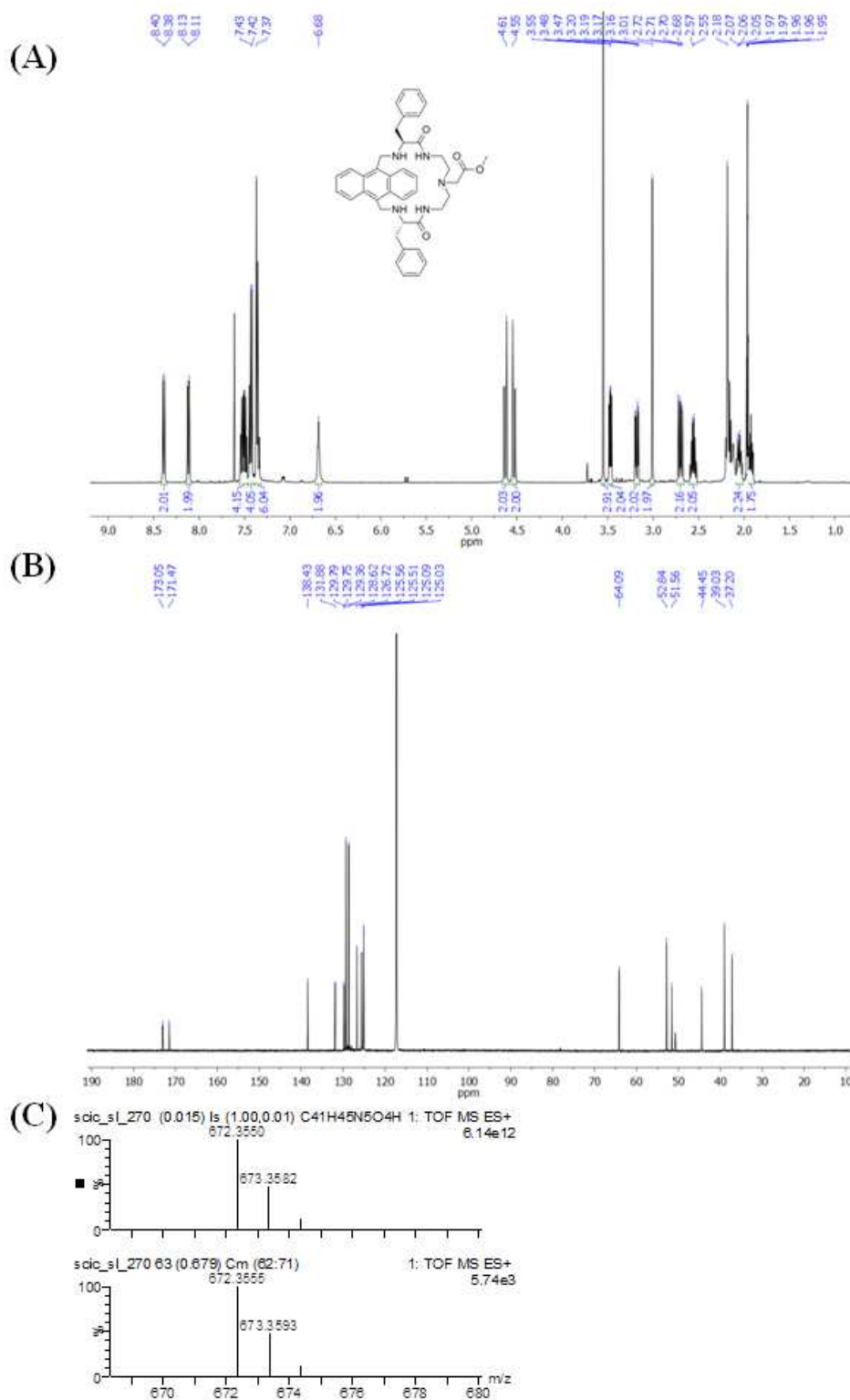


Figure S-5. A) ^1H NMR spectrum of compound **2** in $\text{DMSO-}d_6$. B) ^{13}C NMR spectrum of compound **2** in $\text{DMSO-}d_6$. C) ESI-TOF spectrum of compound **2** and simulated pattern for $[\text{M}+\text{H}]^+$.









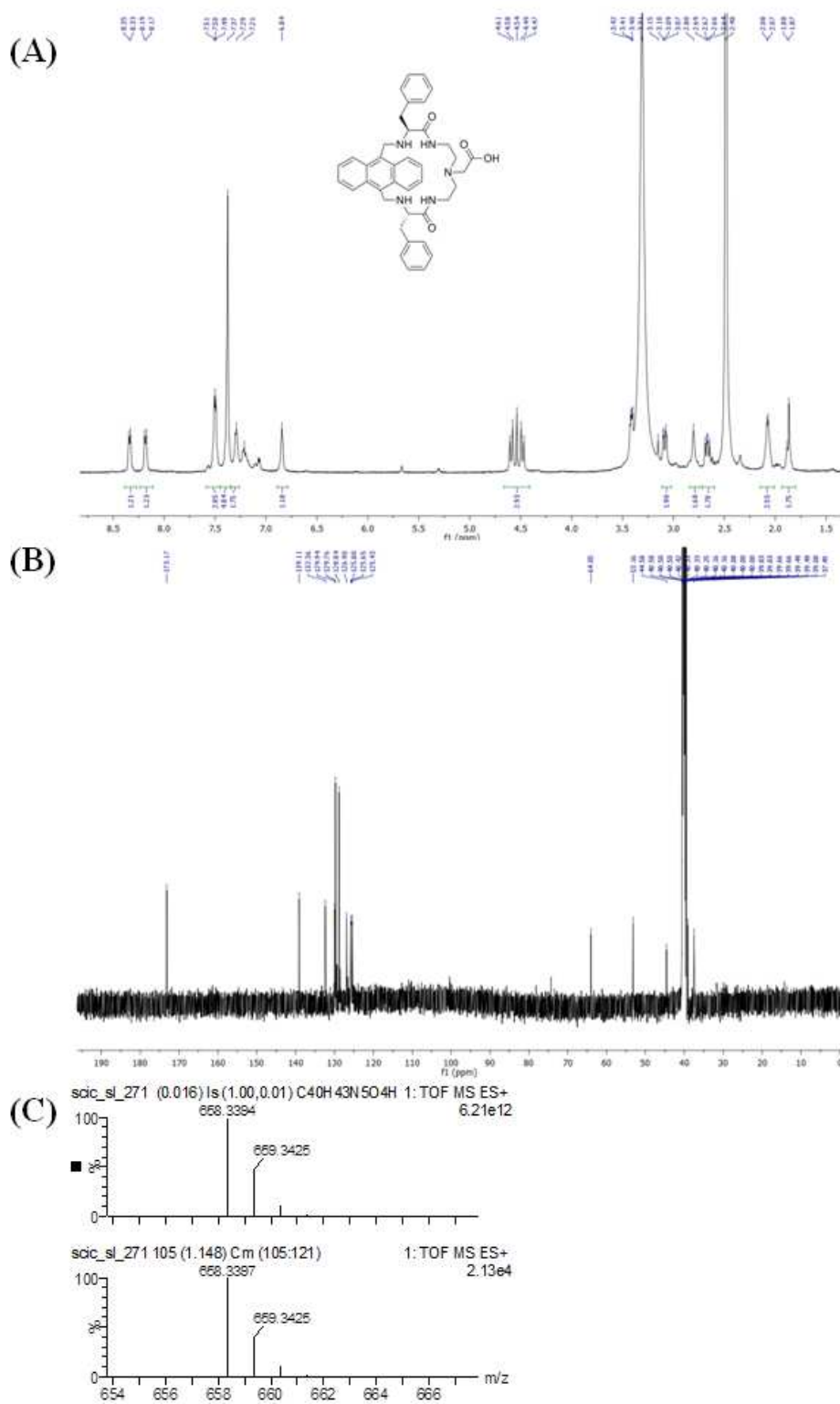


Figure S-10. A) ^1H NMR spectrum of compound **4** in $\text{DMSO-}d_6$. B) ^{13}C NMR spectrum of compound **4** in $\text{DMSO-}d_6$. C) ESI-TOF spectrum of compound **4** and simulated pattern for $[\text{M}+\text{H}]^+$.

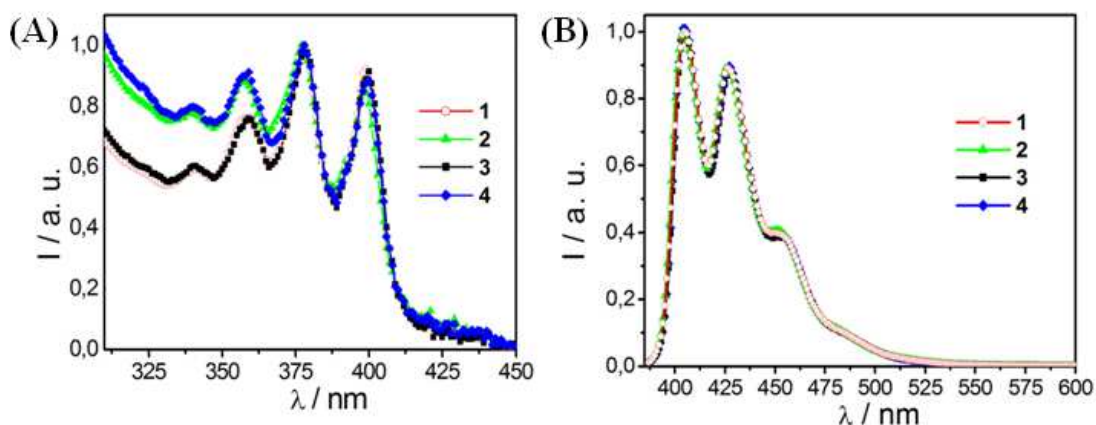


Figure S-11. **A)** Normalized absorption spectra of the anthracenophanes **1-4** in H₂O (0.2% DMSO) at pH 1.7, probe concentration 2 μ M. **B)** Normalized emission spectra of the anthracenophanes **1-4** in H₂O (0.2% DMSO) at pH 1.7, probe concentration 2 μ M, $\lambda_{\text{exc}} = 374$ nm.

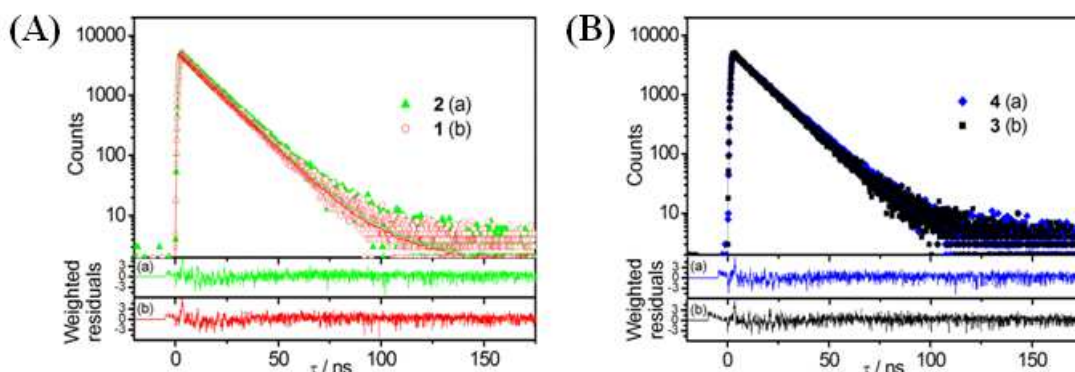


Figure S-12. Fluorescence decay traces of the anthracenophanes; **A)** **1** and **2**, and **B)** **3** and **4** in H₂O (0.2% DMSO) at pH 1.7 ($\lambda_{\text{exc}} = 372$ nm, $\lambda_{\text{em}} = 420$ nm). Probe concentration 2 μ M.

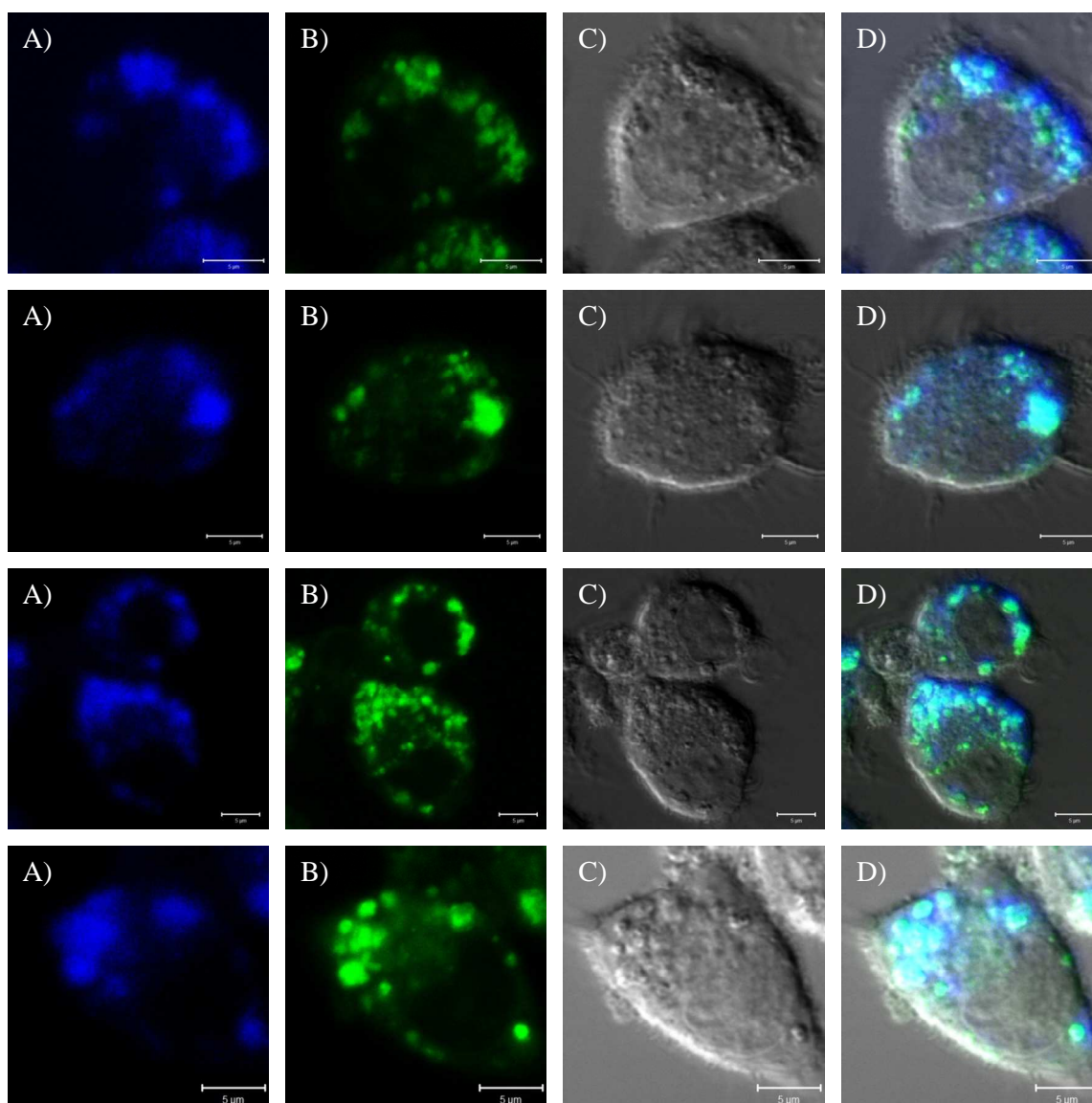


Figure S-13. Distribution and colocalization experiments with probe **2** and LysoSensor Green DND-189. **A)** Fluorescence images of the compound **2**, collected with a confocal laser scanning microscope in the blue channel **B)** Fluorescence images of the DND-189 probe collected with a confocal laser scanning microscope in the green channel. **C)** Differential interference contrast (DIC) images collected with a confocal laser scanning microscope in the DIC mode. **D)** Composite images of blue, green and DIC channels.

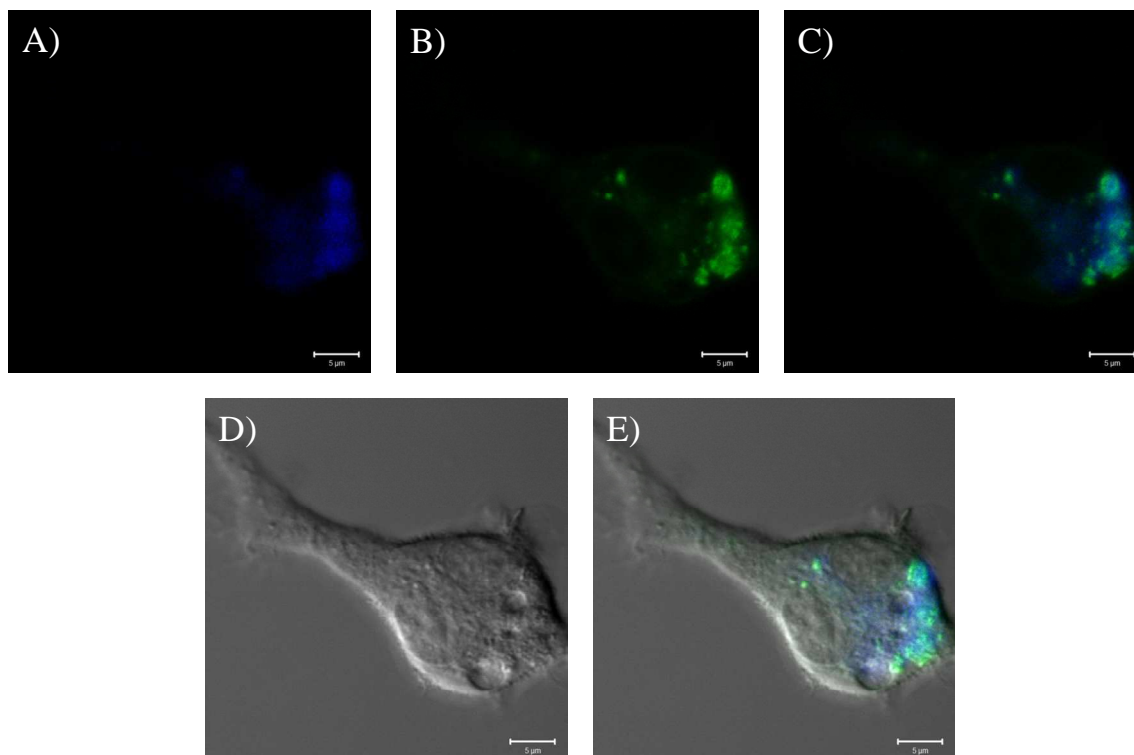


Figure S-14. Distribution and colocalization experiments with probe **1** and LysosSensor Green DND-189. **A)** Fluorescence image of the compound **1**, collected with a confocal laser scanning microscope in the blue channel. **B)** Fluorescence image of the DND-189 probe collected with a confocal laser scanning microscope in the green channel. **C)** Merged image of the blue and the green channels. **D)** DIC image collected with a confocal laser scanning microscope in the DIC mode. **E)** Composite image of blue, green and DIC channels.

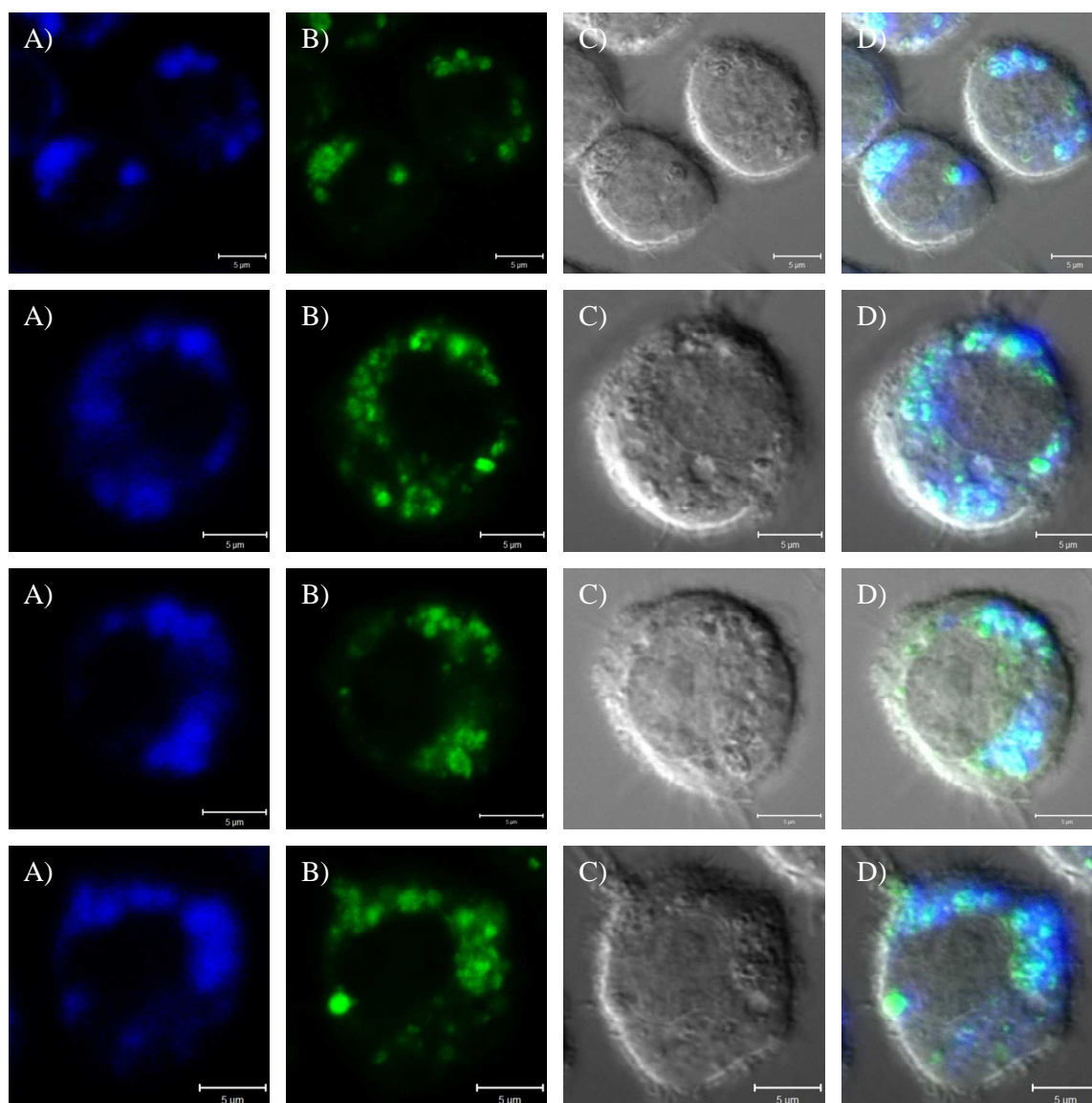


Figure S-15. Distribution and colocalization experiments with probe **1** and LysoSensor Green DND-189. **A)** Fluorescence images of the compound **1**, collected with a confocal laser scanning microscope in the blue channel. **B)** Fluorescence images of the DND-189 probe collected with a confocal laser scanning microscope in the green channel. **C)** DIC images collected with a confocal laser scanning microscope in the DIC mode. **D)** Composite images of blue, green and DIC channels.

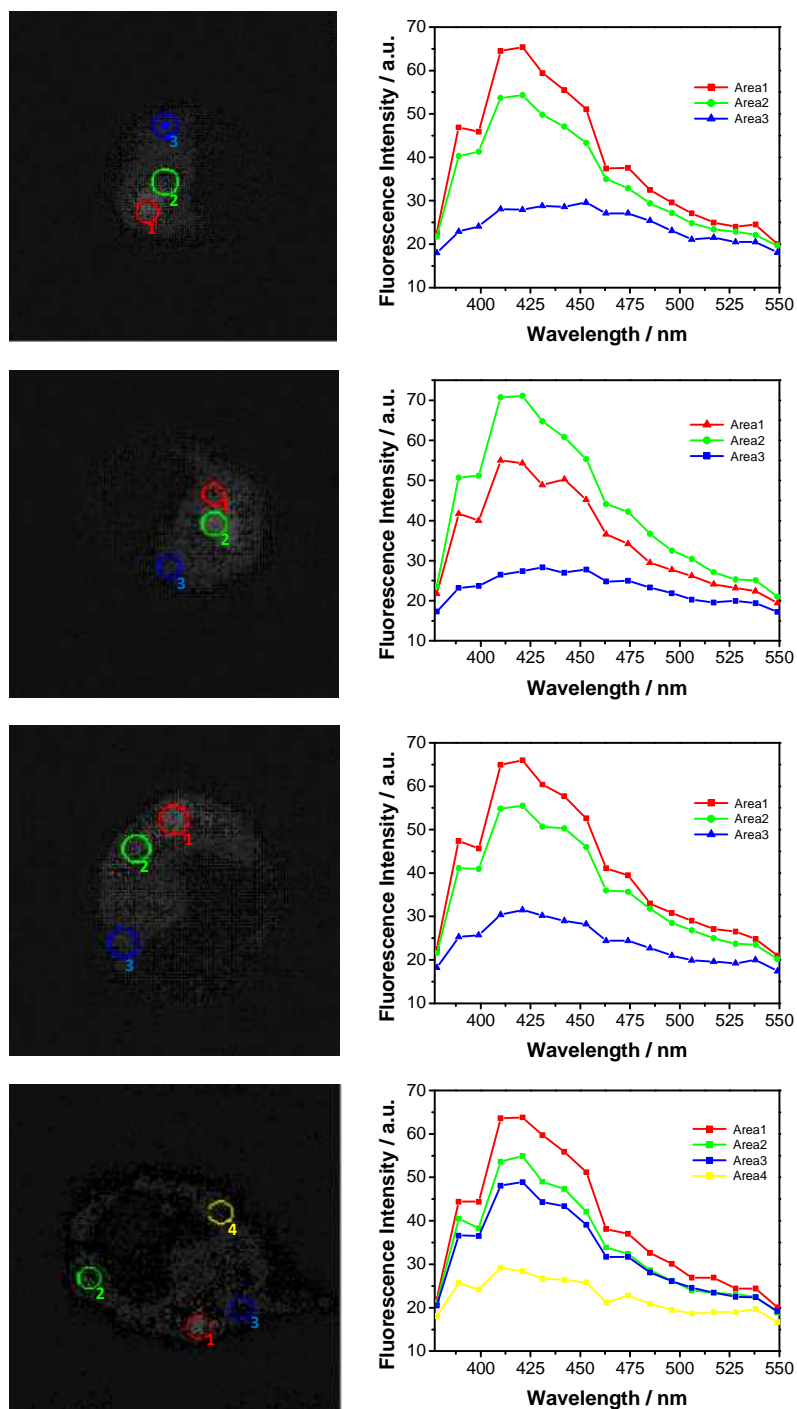


Figure S-16. Fluorescence emission spectra of probe **2** from within the intracellular environment.

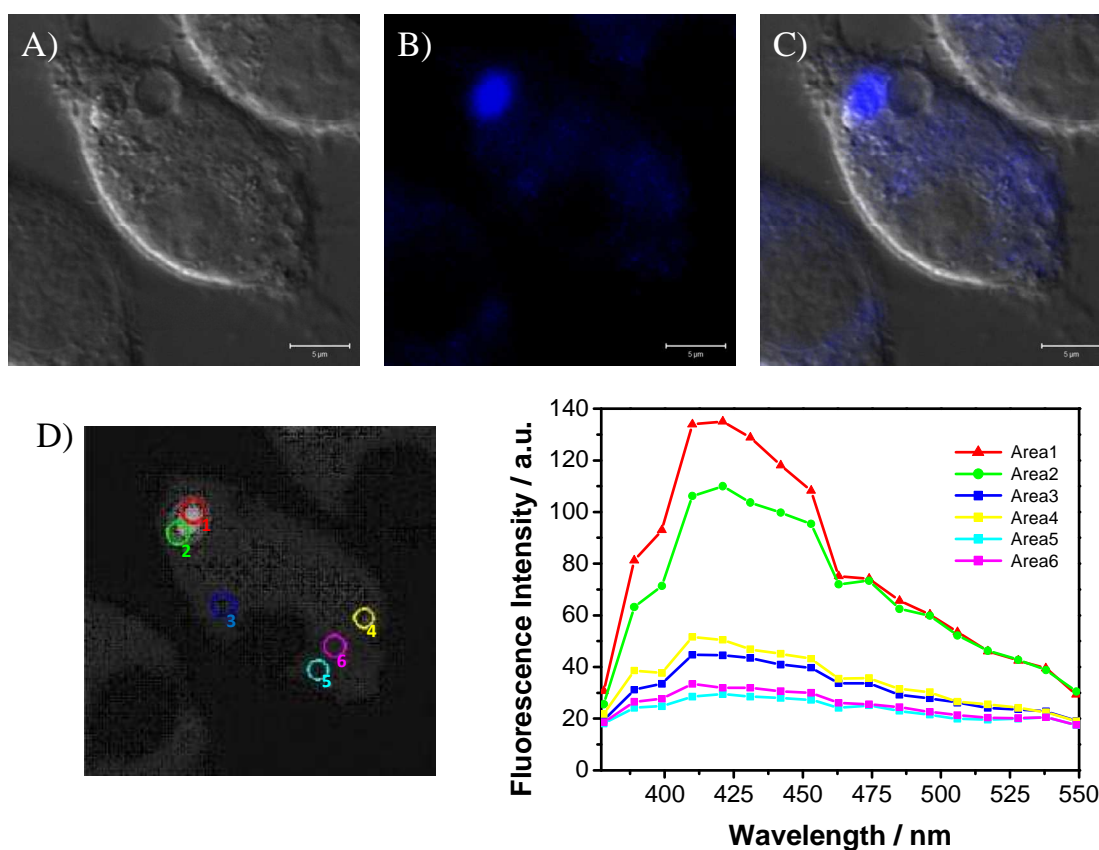


Figure S-17. Intracellular emission spectra of probe **1**. **A)** DIC image was collected with a confocal microscope in the DIC mode. **B)** Fluorescence image of **1** was collected with a confocal microscope in the blue channel. **C)** Composite image of blue and DIC channels. **D)** Fluorescence spectra of compound **1** inside the cell selecting different areas within the cell.

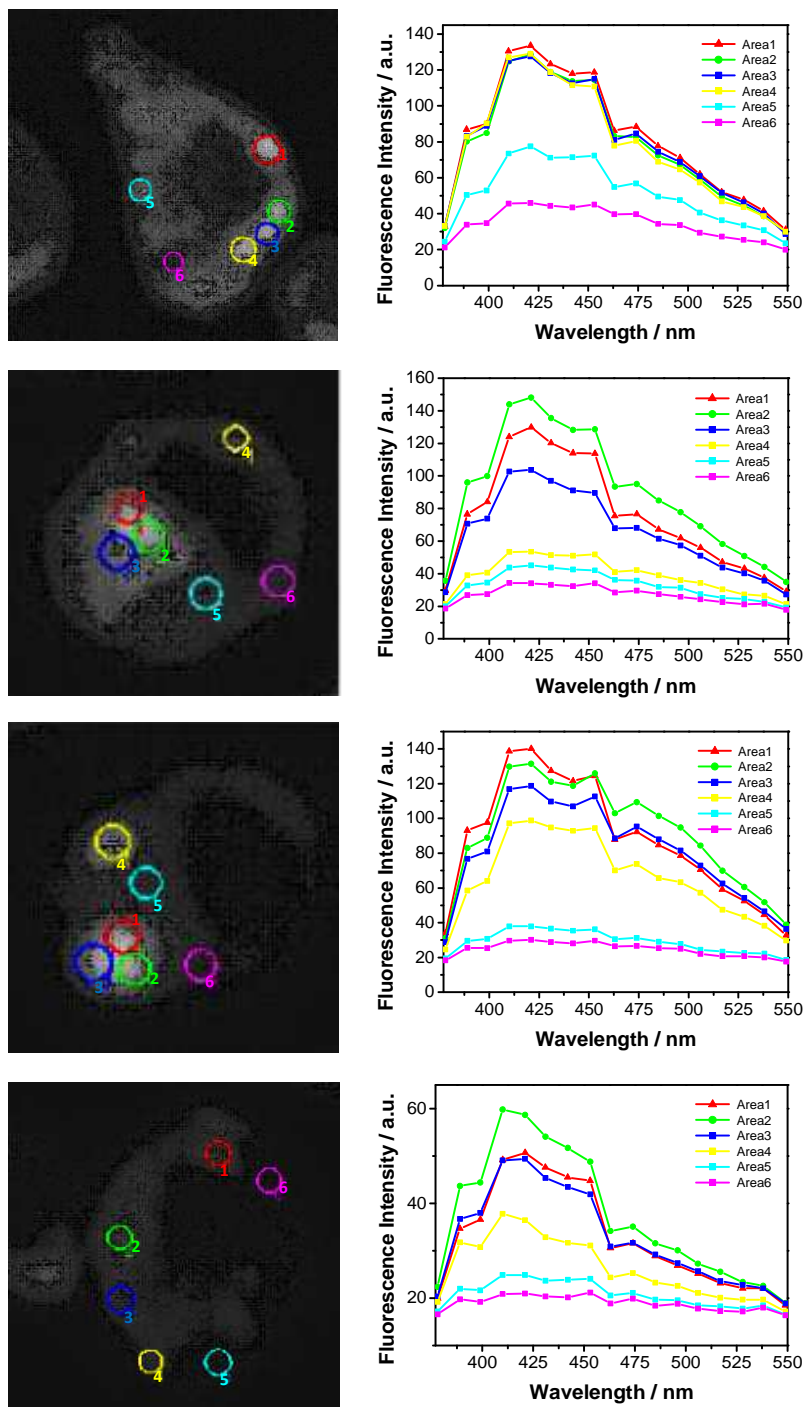


Figure S-18. Fluorescence emission spectra of probe **1** from within the intracellular environment.