

## Supplementary Information

Barcode signal amplifying strategy for sensitive and accurate protein detection on LC-MS/MS

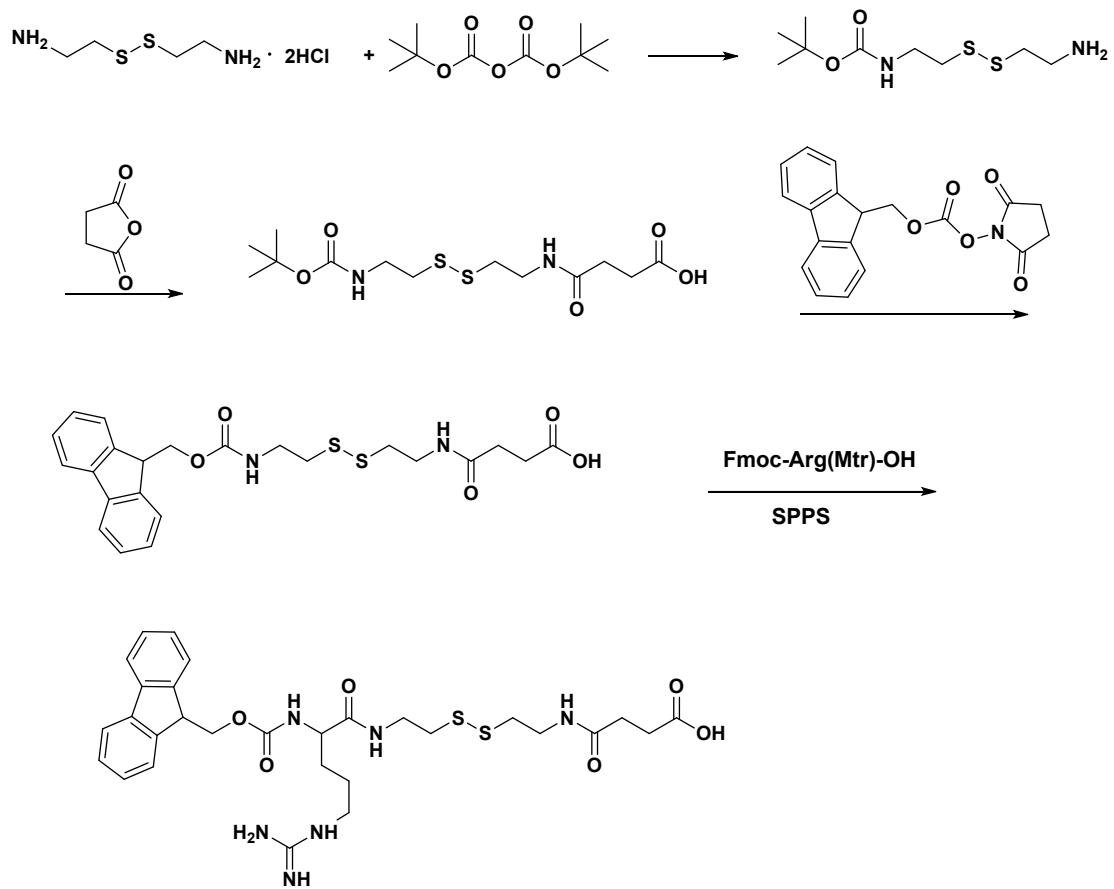
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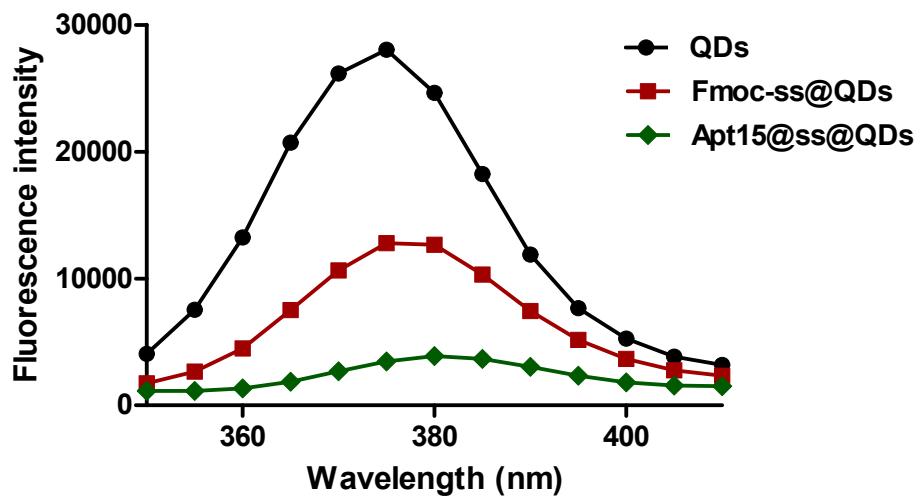
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<sup>2</sup> Department of Pharmaceutical Analysis, School of Pharmacy, China Pharmaceutical University, Nanjing, 210009, China.

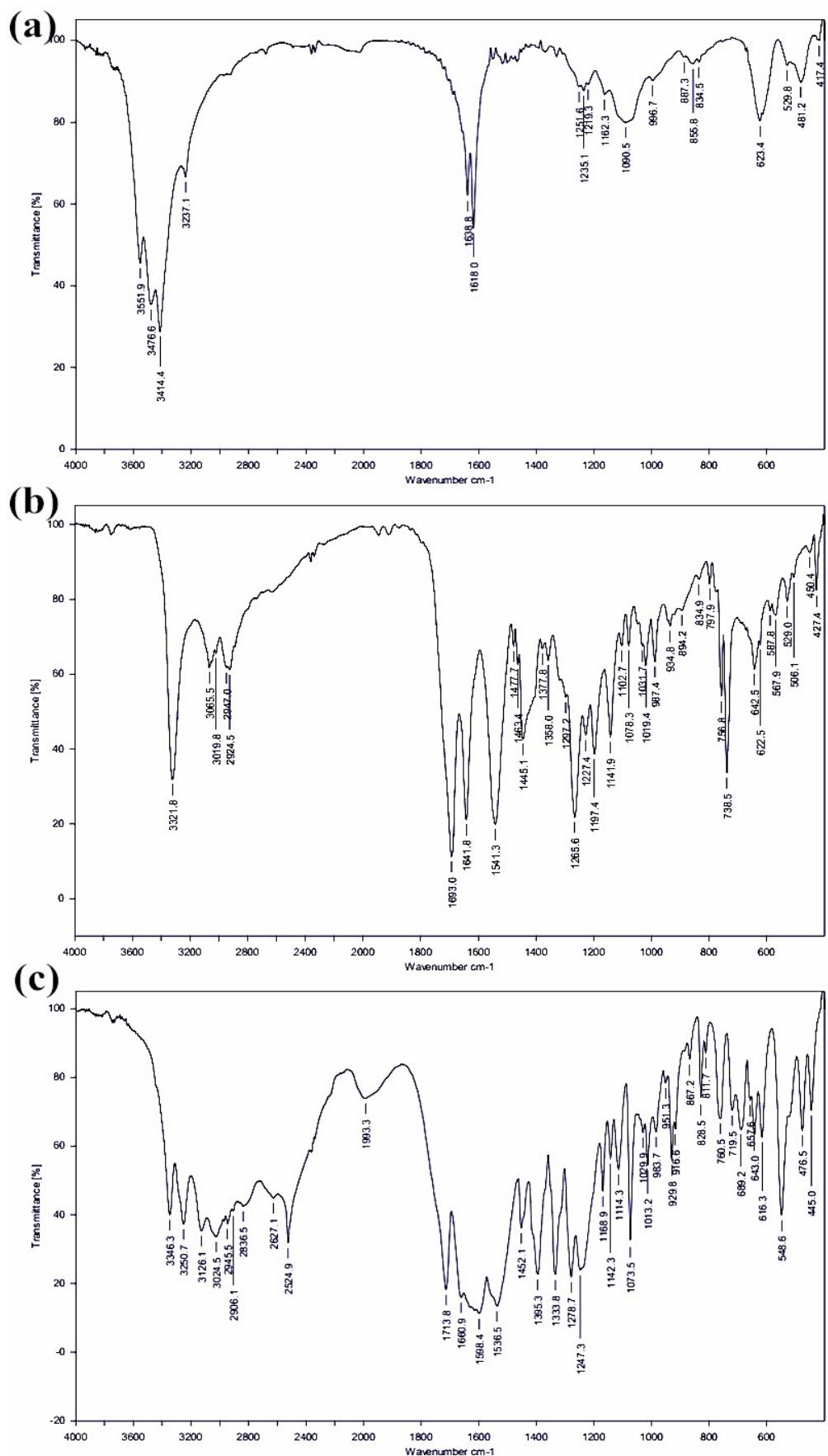
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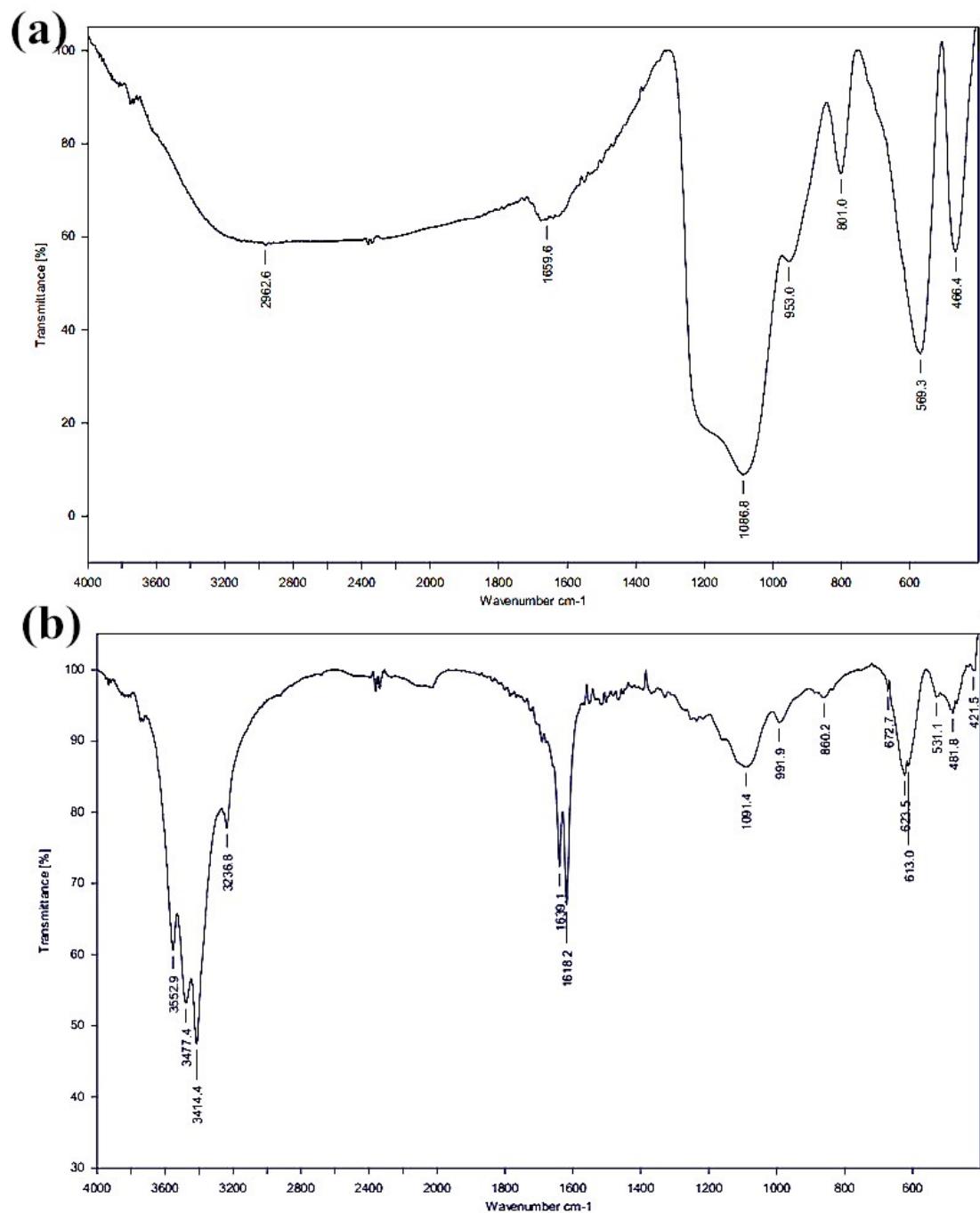
**Figure S-1.** Synthetic route of compounds



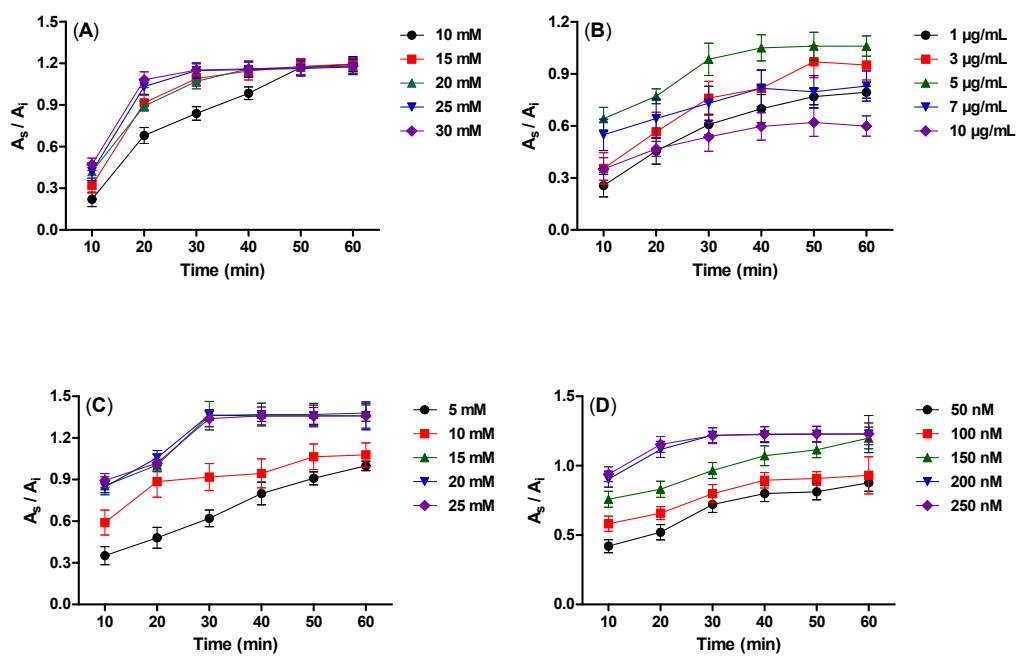
**Figure S-2.** The emission spectra of QDs, Fmoc-ss@QDs and Apt15@ss@QDs solution.



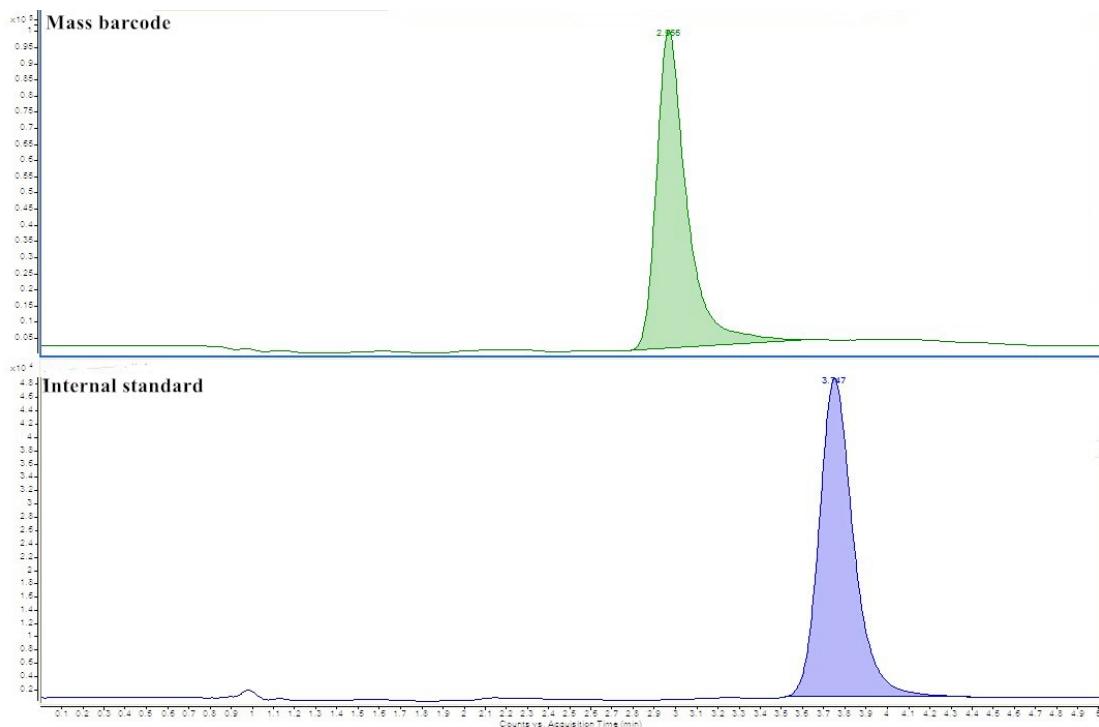
**Figure S-3.** The FTIR spectra of Apt15 (a), Apt15@QDs (b) and Apt15@ss@QDs (c).



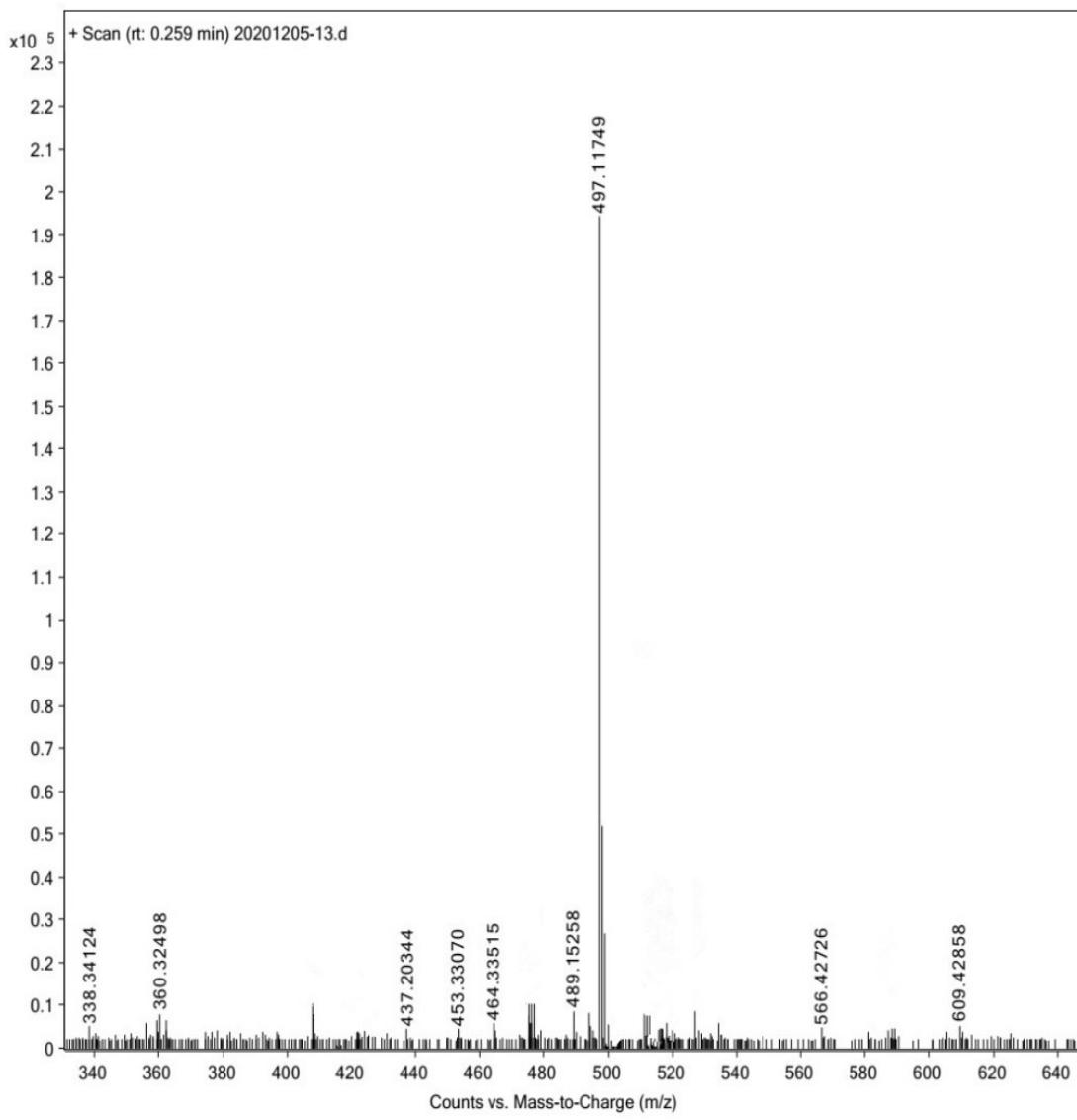
**Figure S-4.** The FTIR spectra of Apt29 (a) and Apt29@MNPs (b).



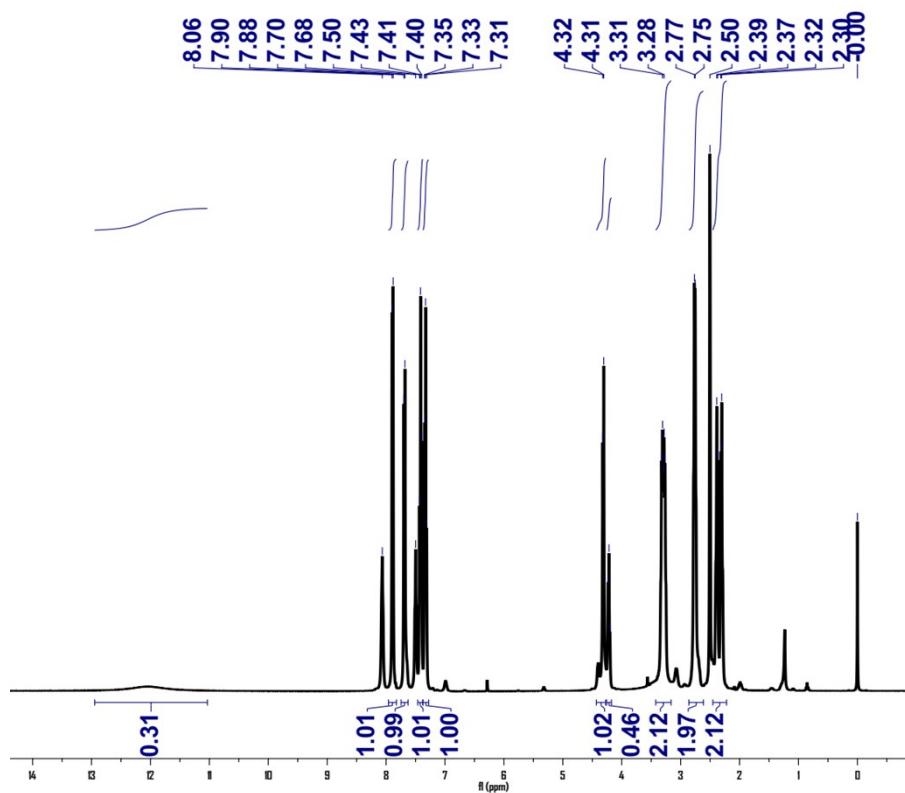
**Figure S-5.** The effects of different amounts of Tris-HCl solution (A), Apt29@MB (B), Apt15@ss@QDs (C) and TCEP (D) on thrombin detection.



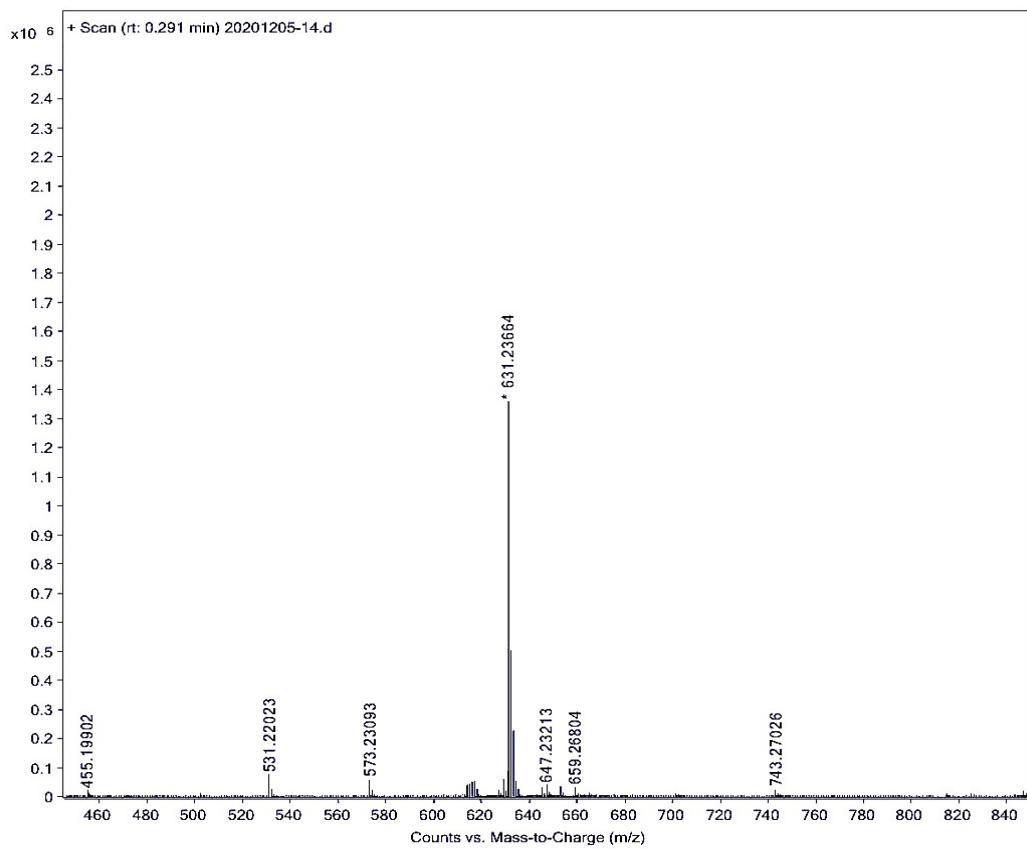
**Figure S-6.** LC-MS/MS spectra of mass barcode and internal standard



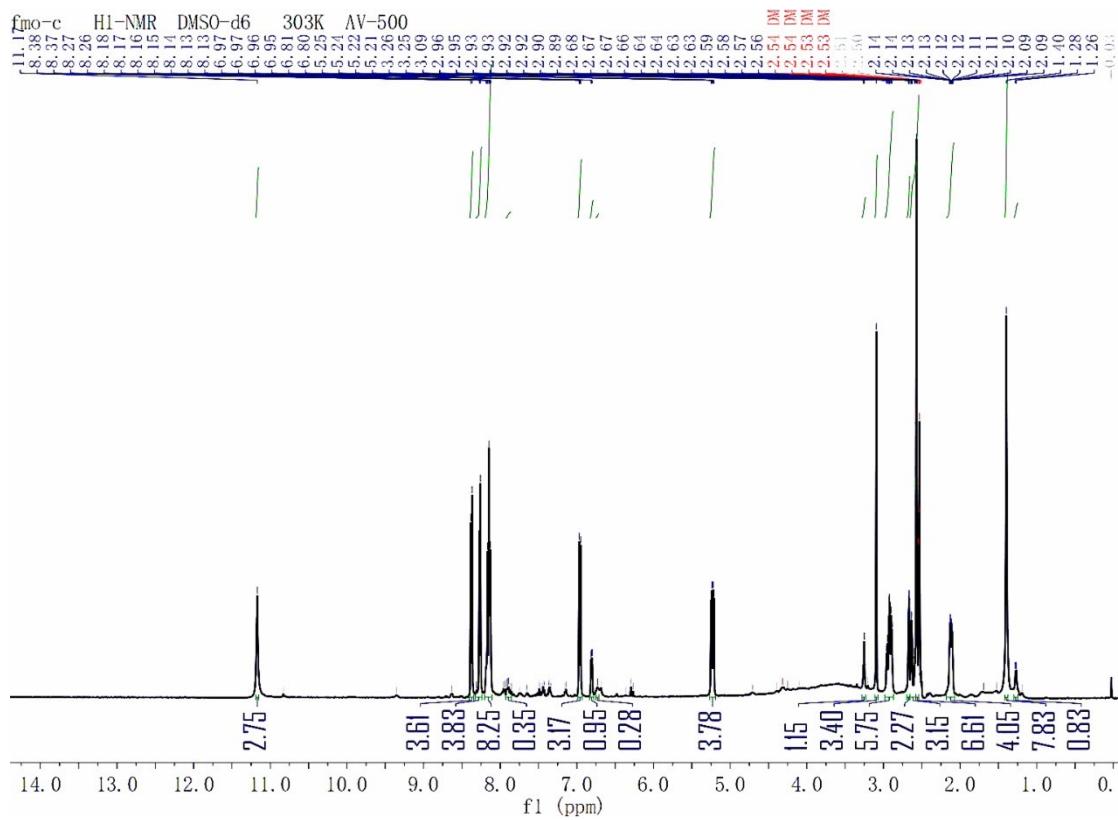
**Figure S-7.** High resolution mass spectrum of Fmoc-ss compound



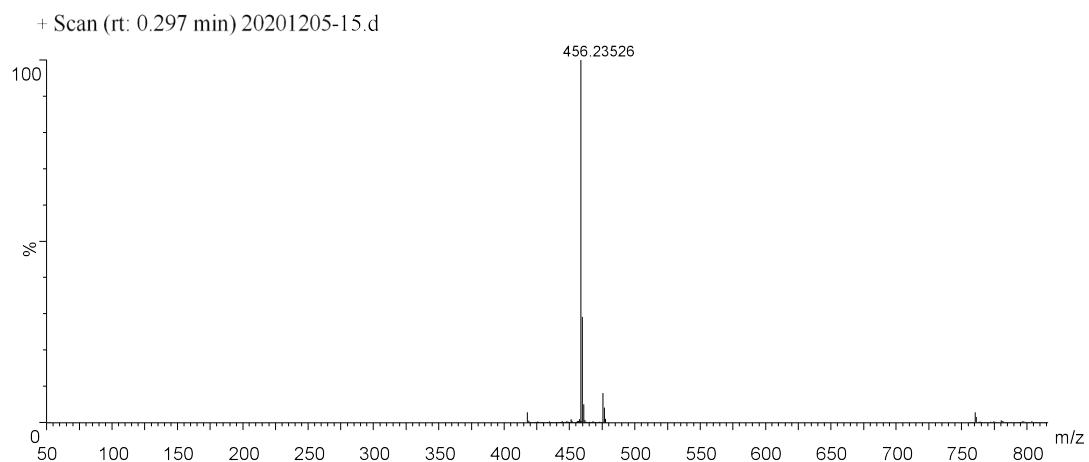
**Figure S-8.**  $^1\text{H}$  NMR of Fmoc-ss compound



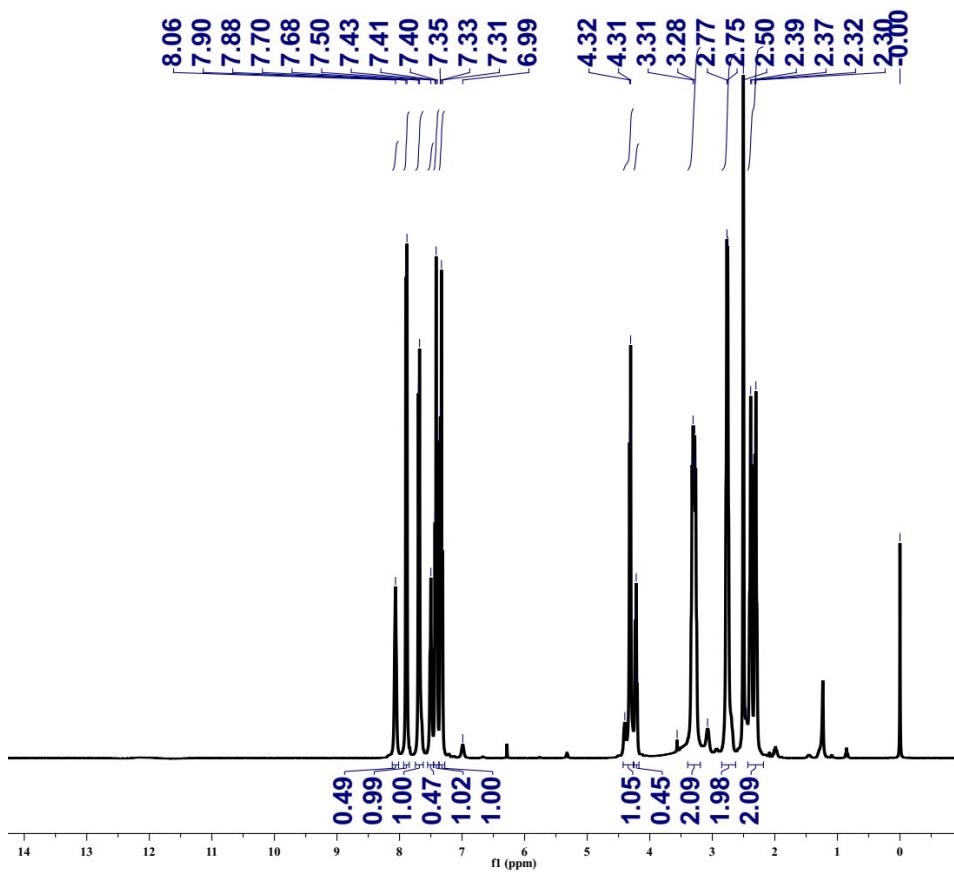
**Figure S-9.** High resolution mass spectrum of Fmoc-R-ss compound



**Figure S-10.**  $^1\text{H}$ -NMR of Fmoc-R-ss compound



**Figure S-11.** High resolution mass spectrum of mass barcode compound



**Figure S-12.** <sup>1</sup>H-NMR of mass barcode compound