Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting Information

1,5-Diaminonaphthalene functionalized carbon nanodots as a novel matrix for the analysis of small molecules by matrix assisted laser desorption/ionization mass spectrometry

Yueying Zhang [ab], Dan Gao*[bc], Shangfu Li [bc], Weili Wei [d], Jinshun Lin [bc], and Yuyang Jiang [be]

[a.] Department of Chemistry, Tsinghua University, Beijing 100084, China

[b.] State Key Laboratory of Chemical Oncogenomics, the Graduate School at Shenzhen, Tsinghua University, Shenzhen, 518055, China. E-mail: gao.dan@sz.tsinghua.edu.cn

[c.] Key Laboratory of Metabolomics at Shenzhen, Graduate School at Shenzhen, Tsinghua University, Shenzhen, 518055, China

[d.] School of Pharmaceutical Sciences, Chongqing University, Chongqing, 401331, China

[e.] School of Pharmaceutical Sciences, Tsinghua University, Beijing, 100084, China

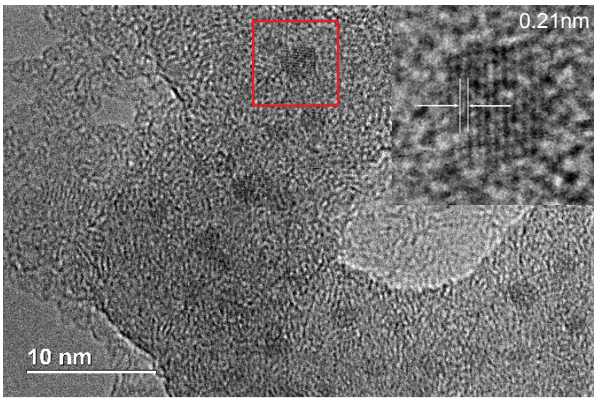

Fig. S1 HRTEM image of the CDs.

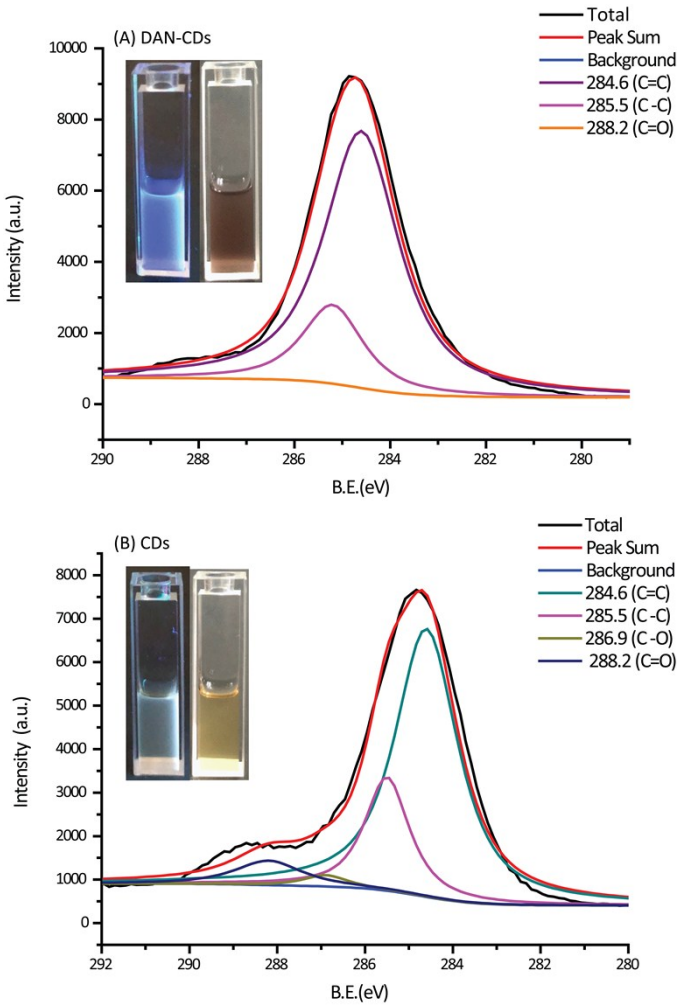

Fig. S2 High-resolution XPS spectra of C1s peaks of the (A) DAN-CDs, inset: photographs of the obtained DAN-CDs under illumination UV (365nm) light (left) and daylight (right). (B) CDs, inset: photographs of the obtained CDs under illumination UV (365nm) light (left) and daylight (right).

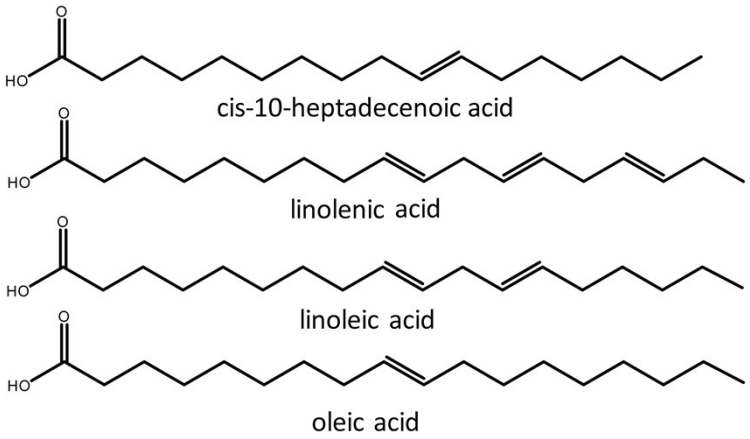

Fig. S3 The chemical structures of fatty acids.

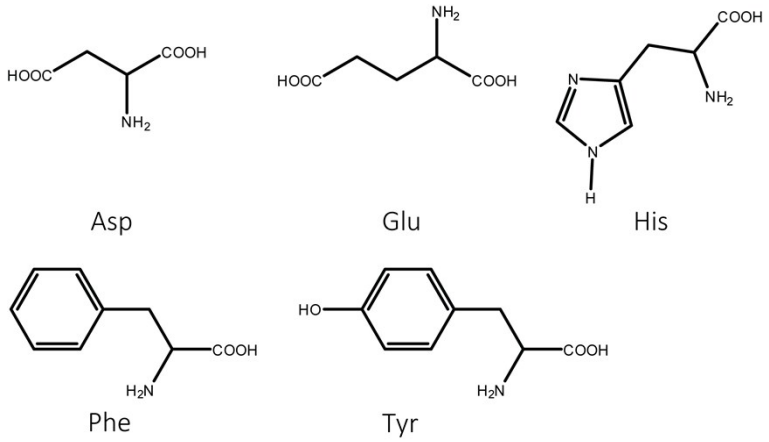

Fig. S4 The chemical structures of amino acids.

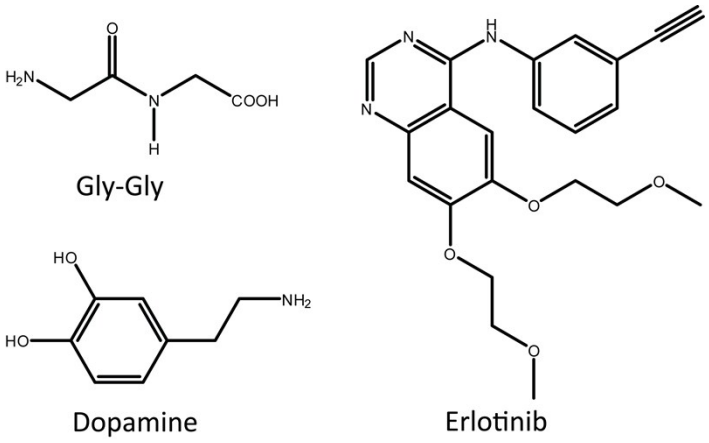

Fig. S5 The chemical structures of Gly-Gly, dopamine and erlotinib.

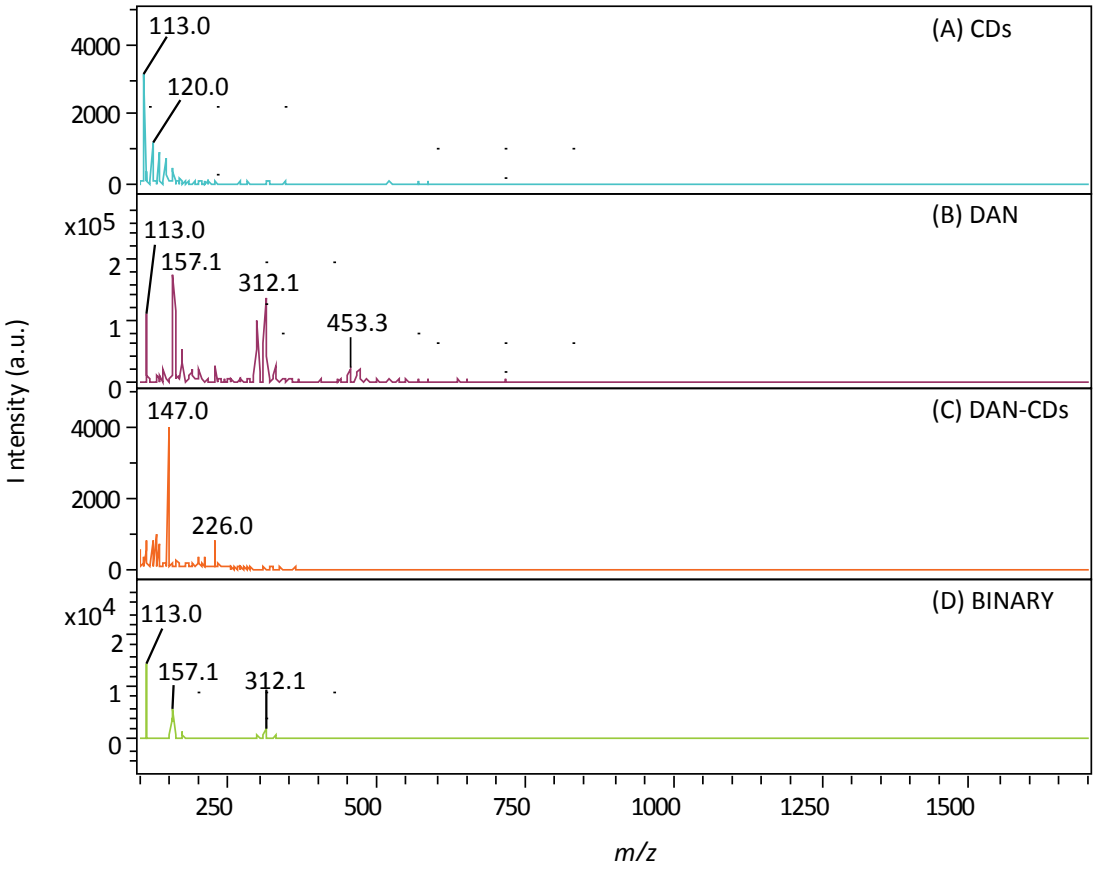

Fig. S6 Backgrounds for (A) CDs, (B) DAN, (C) DAN-CDs and (D) binary matrix.

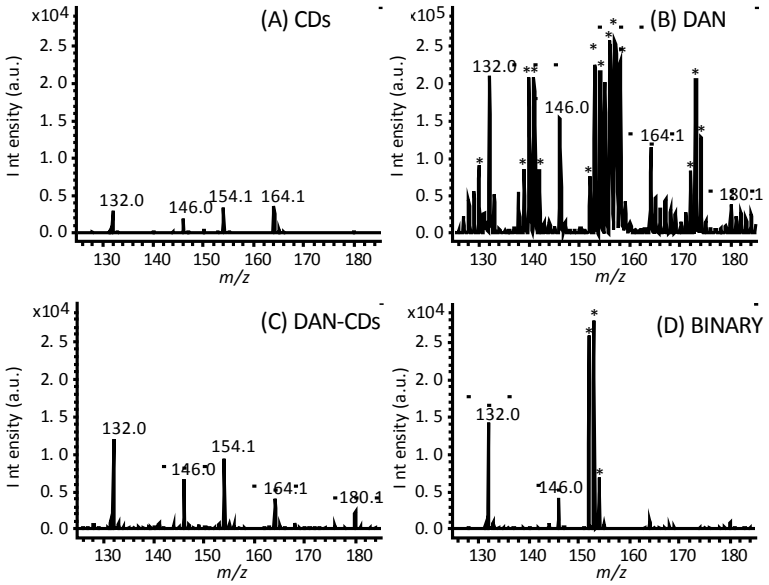

Fig. S7 Mass spectra of amino acids mixture (5 mM) by using different matrices in negative ion mode (*m/z* 132.0 $[Asp-H]^-$, *m/z* 146.0 $[Glu-H]^-$, *m/z* 154.1 $[His-H]^-$, *m/z* 164.1 $[Phe-H]^-$, *m/z* 180.1 $[Tyr-H]^-$). Matrix-related ions were marked with asterisk. Laser intensity: 70%.

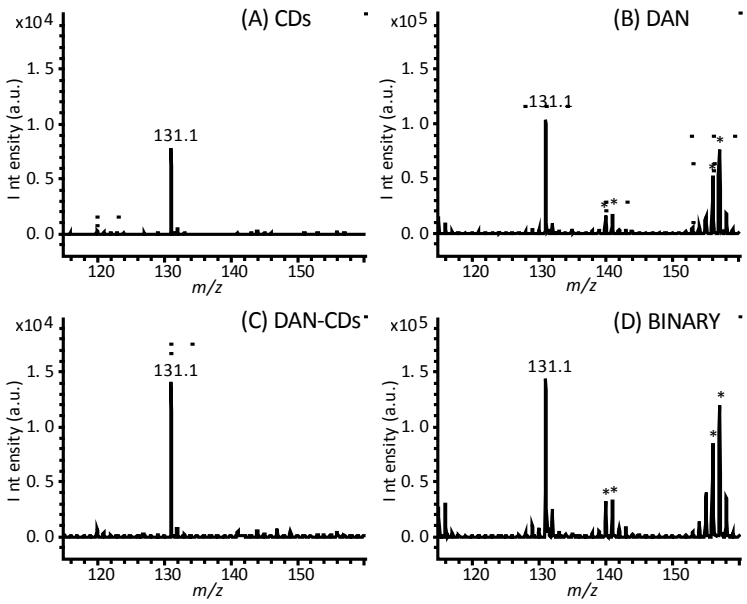

Fig. S8 Mass spectra of Gly-Gly (5 mM) by using different matrices in negative ion mode (*m/z* 131.1 [Gly-Gly-H]$^-$). Matrix-related ions were marked with asterisk. Laser intensity: 70%.

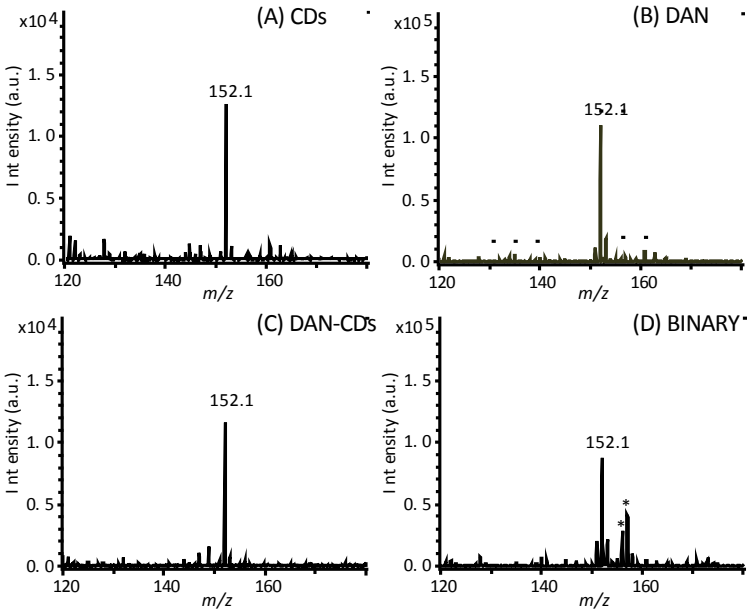

Fig. S9 Mass spectra of dopamine (5 mM) by using different matrices in negative ion mode (*m/z* 152.1 $[Dopamine\text{-}H]^-$). Matrix-related ions were marked with asterisk. Laser intensity: 70%.

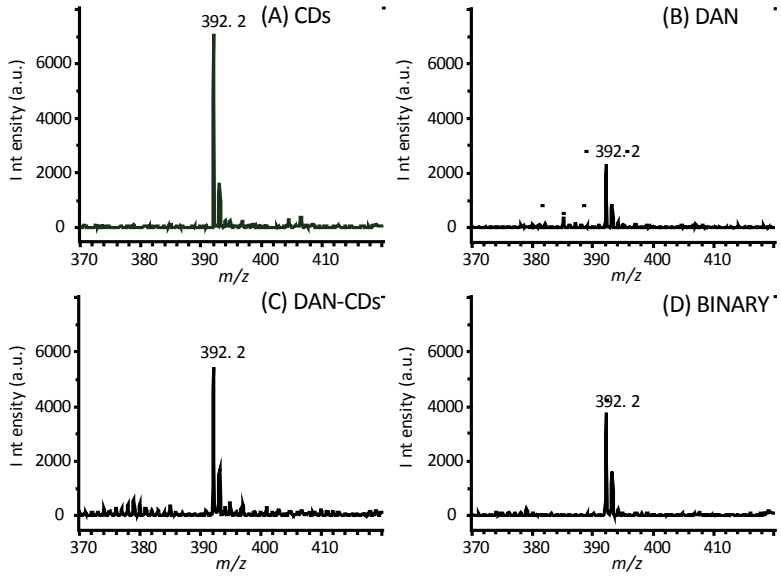

Fig. S10 Mass spectra of erlotinib (5 mM) by using different matrices in negative ion mode (*m/z* 392.2 [Erlotinib-H]$^-$). Laser intensity: 50%.