Supporting Information

Acridine-based near-infrared dyes as high-performanced Raman reporter molecules for cancer cell imaging

Jiasheng Du, Jinming Li, Dong Wang, Hui Cao, Wanli He, Yuzhan Li, Yang Zhou*

Department of Materials Physics and Chemistry, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, China

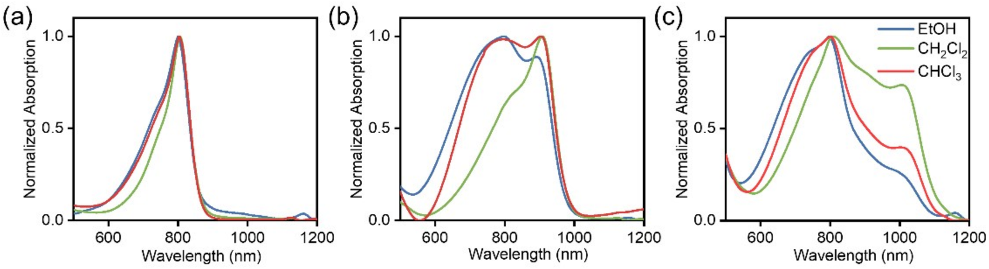


Figure S1 UV−Vis absorption spectra of (a) C3AD, (b) C5AD, and (c) C7AD in EtOH (blue) , CH_2Cl_2 (green) and $CHCl_3$ (red) .

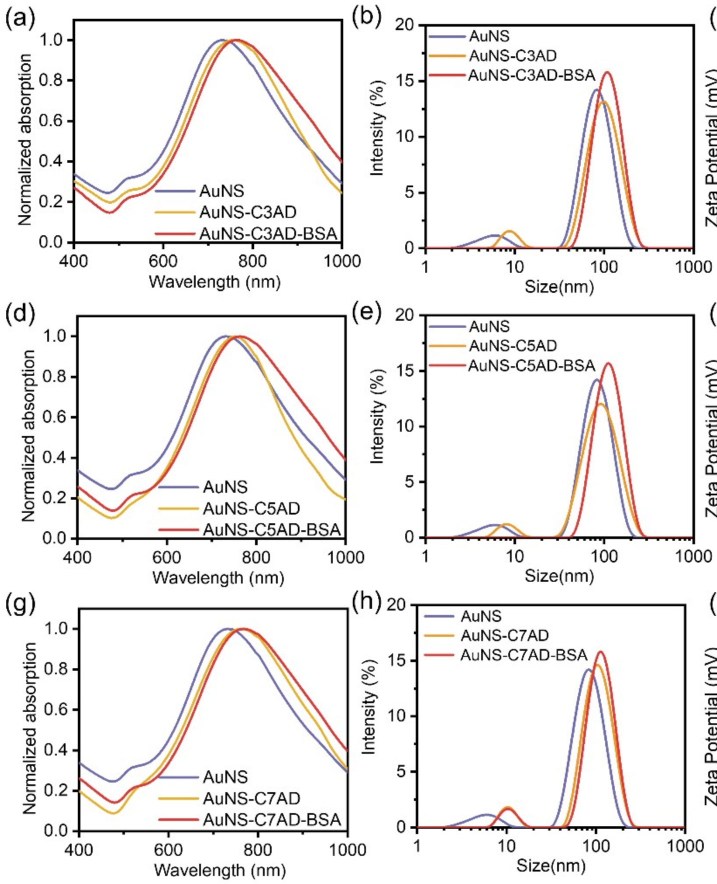


Figure S2 UV−Vis absorption spectra, hydrodynamic diameter distributions and average zeta potential of (a-c) C3AD (d-f) C5AD and (g-i) C7AD nanotags.

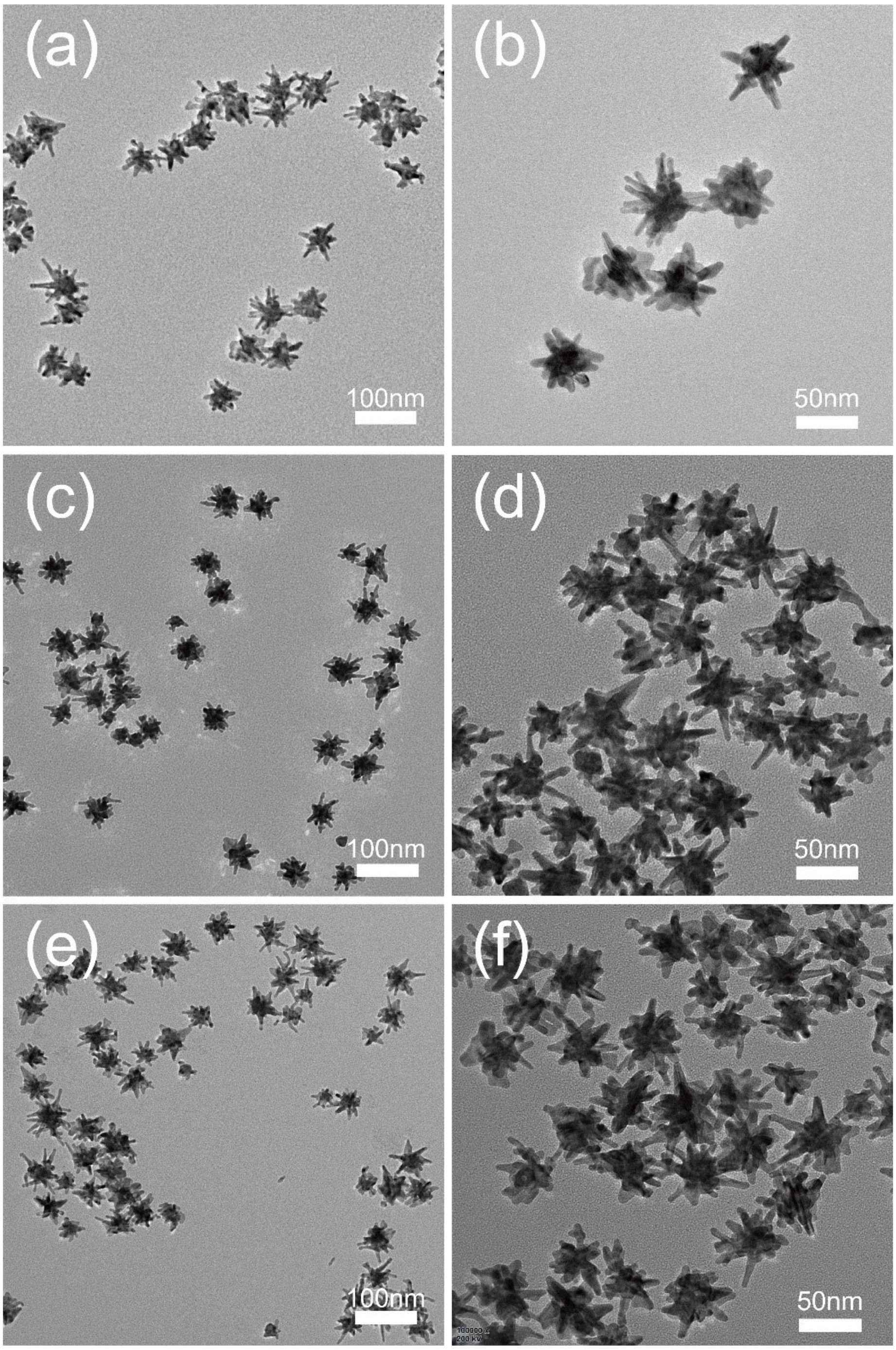


Figure S3 TEM images of (a,b) AuNS-C3AD-BSA, (c,d) AuNS-C5AD-BSA and (e,f) AuNS-C7AD-BSA.

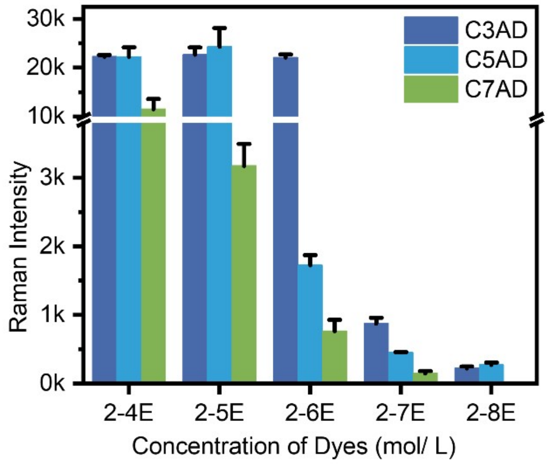


Figure S4 The relationship between the concentration of AD dyes and SERS intensity of 1277 cm^{-1} SERS band. (n=3) (785 nm wavelenth, 0.85 mW laser power, 10 s exposure time and 50L× objective lens.)

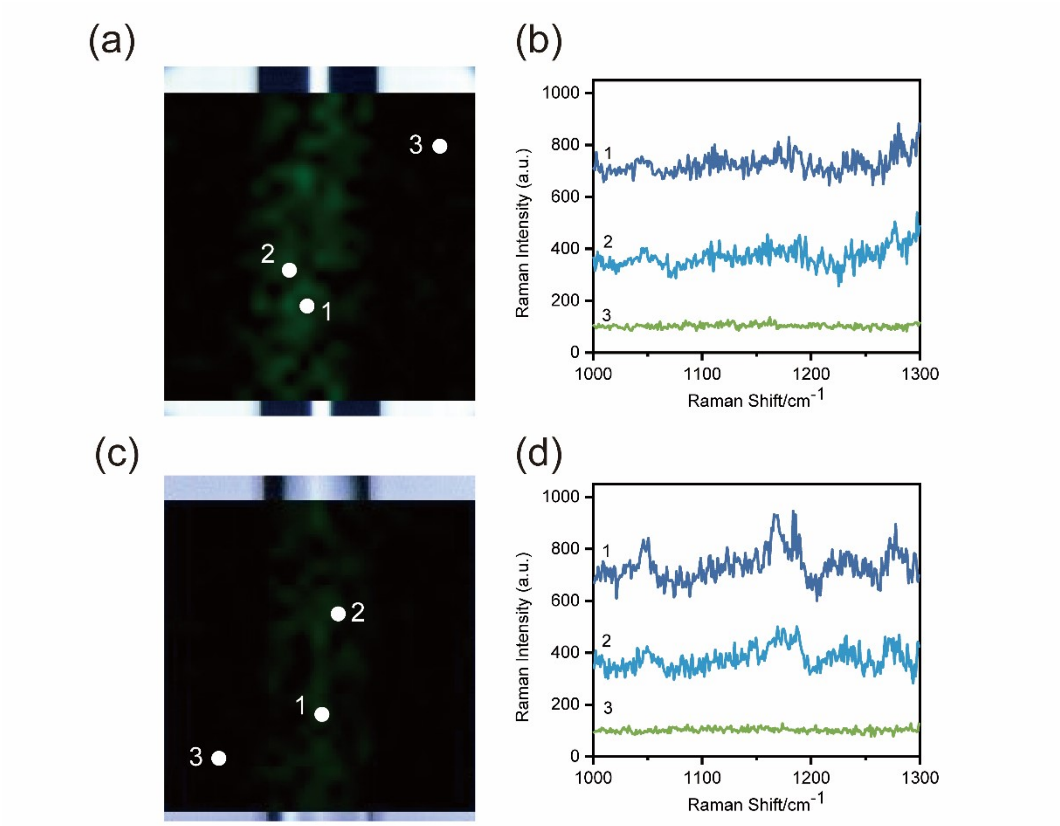


Figure S5 SERS images of (a) AuNS-C3AD-BSA and (c) AuNS-C7AD-BSA and (b and d) the corresponding SERS spectraof 16.2 pM inside the vessel (positions 1 and 2) and outside the vessel (position 3).

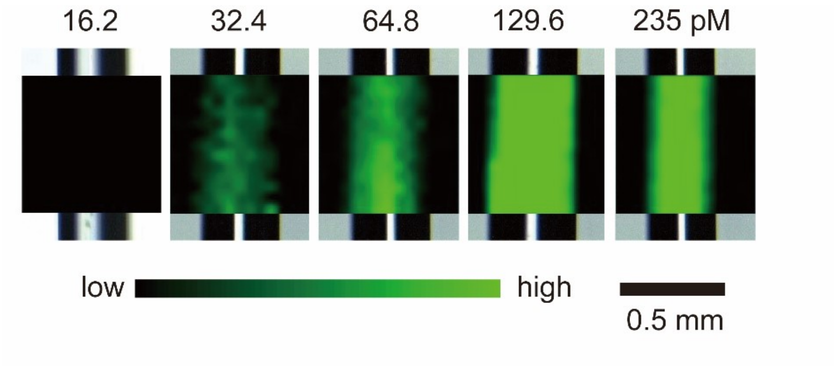


Figure S6 SERS images of AuNS-DTTC-BSA. The SERS images were acquired under a 5× objective lens with 1.7 mW laser power on the samples, 2 s exposure time and 50 μm step size. The SERS images were created with the intensity of 1239 cm^{-1} SERS band after removing the baseline via Wire 5.1.

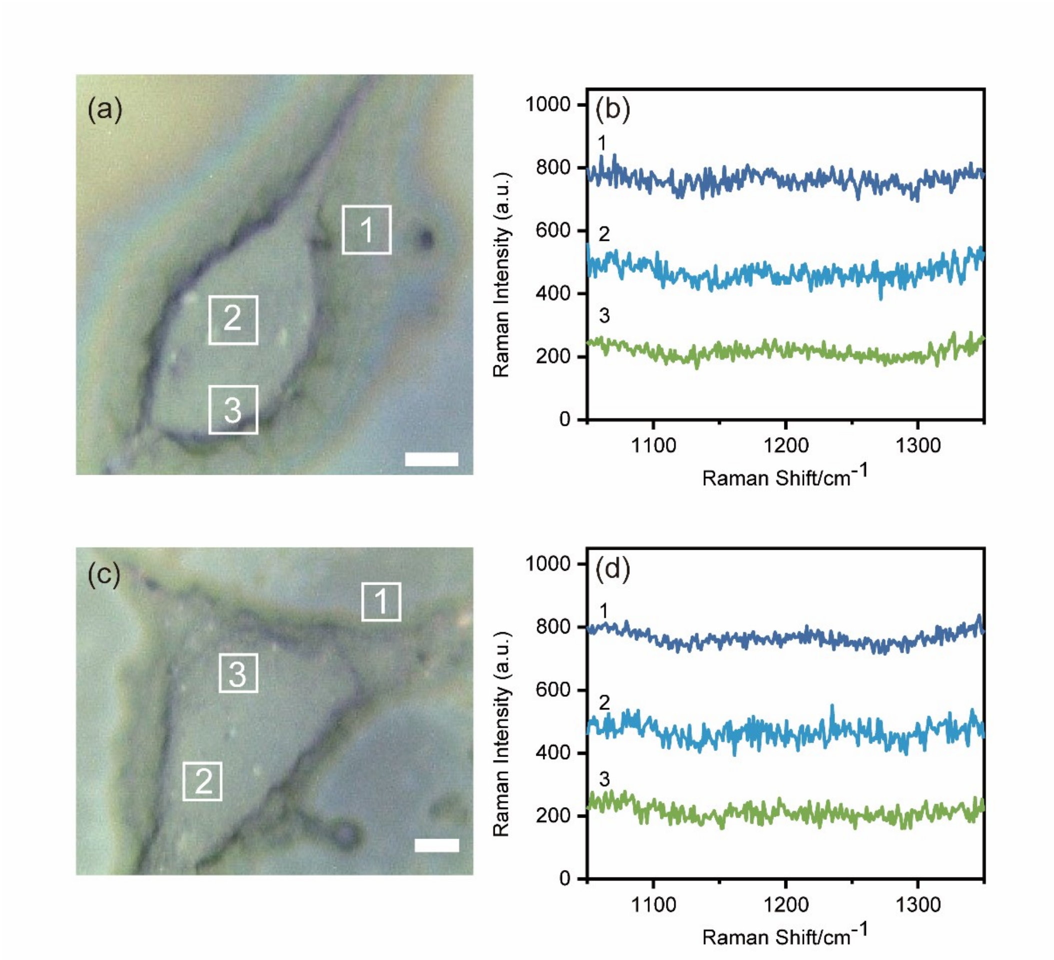


Figure S7 (a) and (c) are bright field image of A549. (b) and (d) are corresponding SERS spectra of position 1, 2, and 3. The SERS imaging was carried out using a 100× objective lens at 8.5 mW laser power with 5 s exposure time and 5 μm step size. Scale bar : 5 μm.

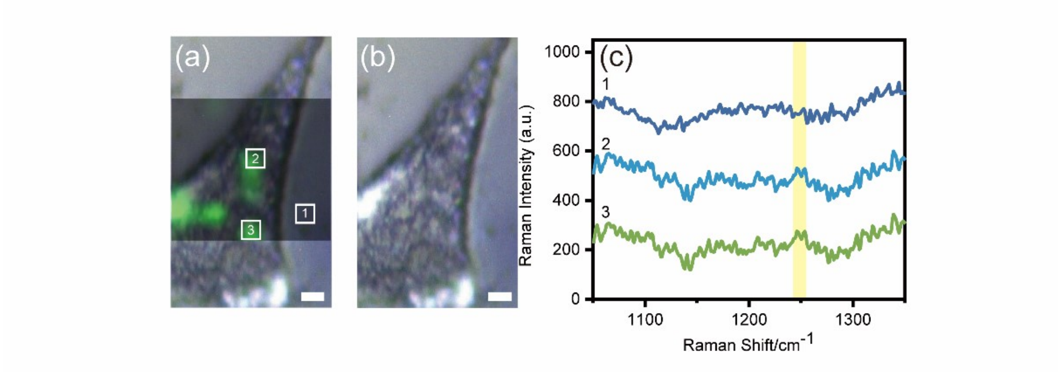


Figure S8 (c) SERS spectra of position 1, 2, and 3 in (a) overlay of bright field image and (b) bright field image of A549 cell. The SERS imaging was carried out using a 100× objective lens at 8.5 mW laser power with 5 s exposure time and 3 μm step size. Scale bar : 5 μm.

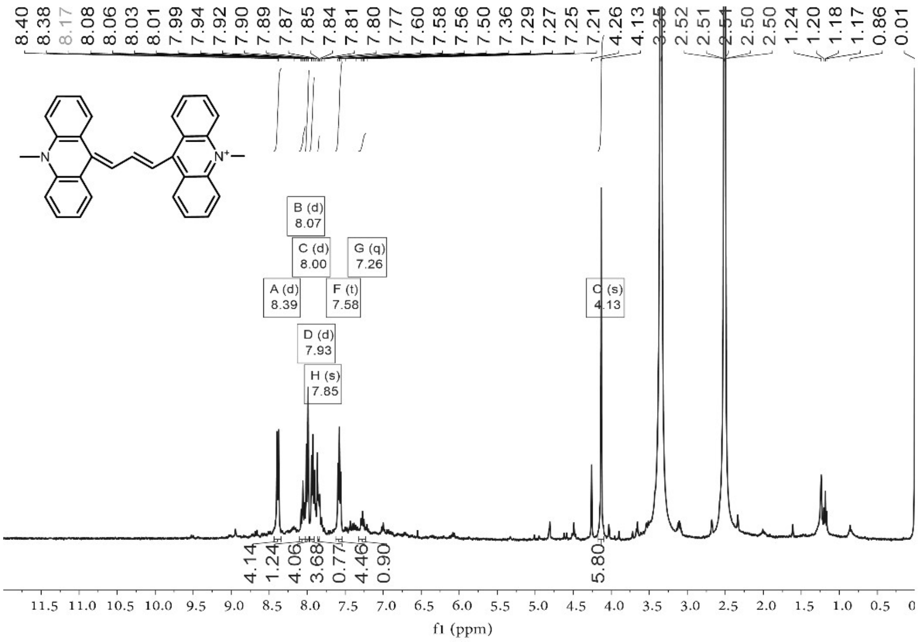


Figure S9 ^{1}H NMR spectra of C3AD

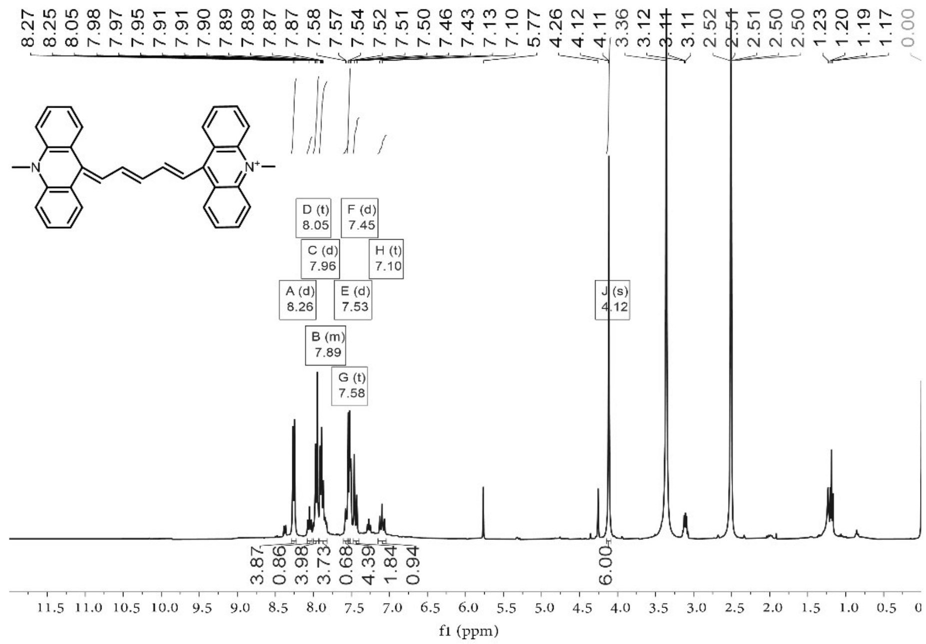


Figure S10 ^{1}H NMR spectra of C5AD

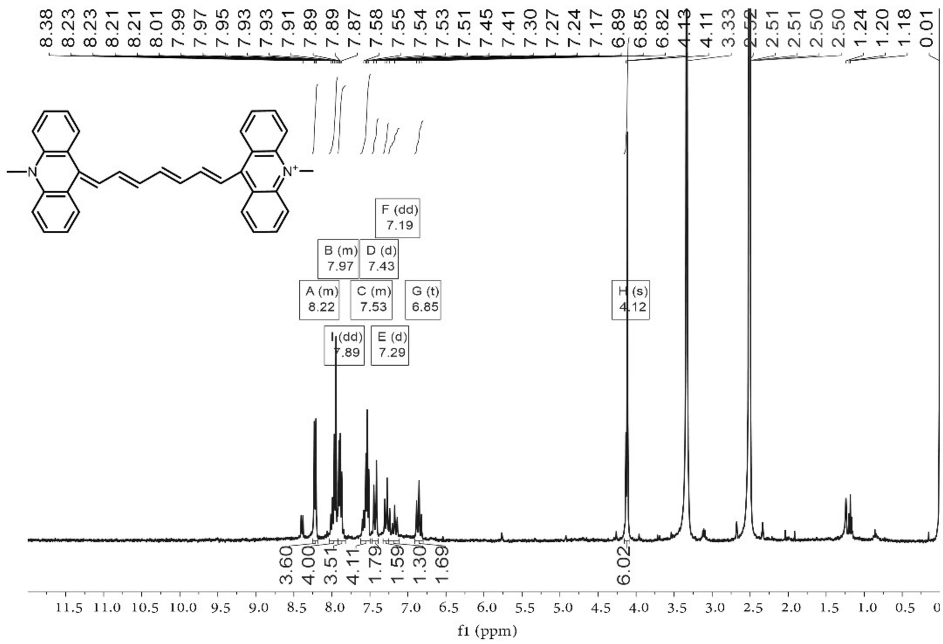
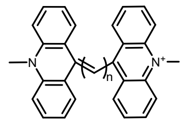
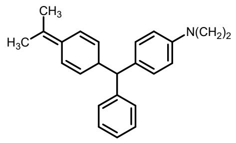
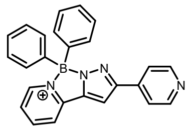
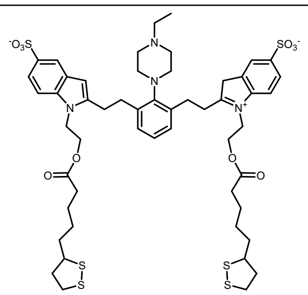
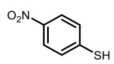
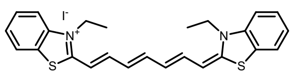
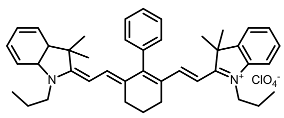
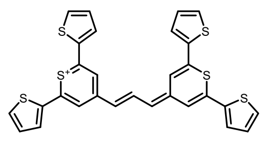
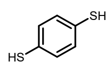


Figure S11 ^{1}H NMR spectra of C7AD

Table S1

Nanostructures	Molecular probe	Detection Limit	Reference
gold nanostar	 AD dyes (n=3, 5, 7)	0.4 pM (n=3) 0.5 pM (n=5) 0.51 pM (n=7)	This Work
gold particles (60 nm)	 Malachite Green	2.3 μM	1
gold nanoparticle (40 nm)	 P4	0.26 nM	2
gold nanostar	 IR7p	0.8 pM	3
Au NSs	 4-NTP	0.13 pM	4
Hollow AgAu	 DTTC	1 pM	5
hollow CuS NPs	DTTC	1 pM	6
gold particles (60 nm)	 IR729	1 fM	7
	 3	100 aM,	
Gap-enhanced Raman tags (GERT)	 1,4-Benzenedithiol	0.1 pM	8

References

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