

Supplementary Information for

11-Mercaptoundecanoic acid capped gold nanoclusters as a fluorescence probe for specific detection of folic acid *via* ratiometric fluorescence strategy

Lei Meng^{a,b}, Jian-Hang Yin^a, Yaqing Yuan^a, , Na Xu^{a*}

^a*College of Materials Science and Engineering, Jilin Institute of Chemical Technology, Jilin 132022, China.*

^b*College of Science, Jilin Institute of Chemical Technology, Jilin 132022, China.*

*E-mail: xn_1216@163.com (Na Xu)

Figures and caption

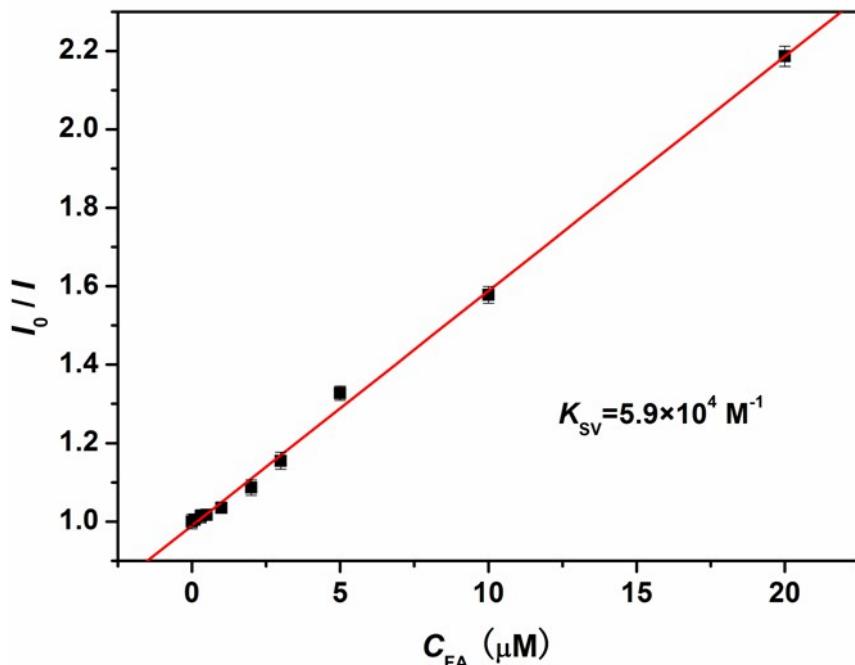


Fig.S1 Stern–Volmer plot of fluorescence quenching, where the I_0 and I represents fluorescence intensity of the AuNCs@MUA in absence and presence of FA, respectively. Inset is quenching constant (K_{sv}) obtained from Stern–Volmer equation.

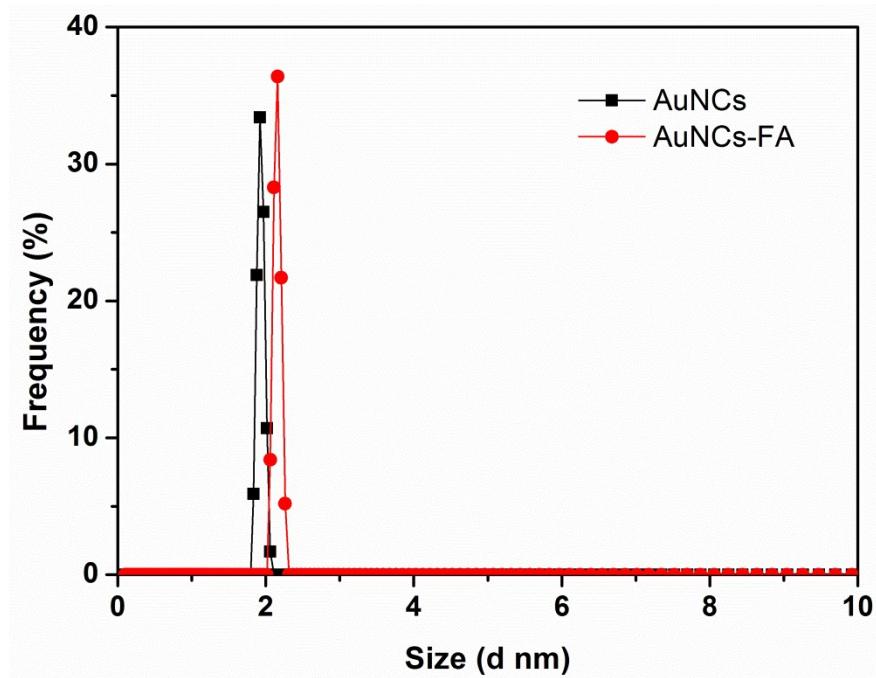


Fig.S2 Size distributions of AuNCs@MUA in absence and presence of FA

Table S1. Research papers available up to now concerning different fluorescence probes for detection of FA

Ref.	materials	Linear range	LOD	response strategy
S1	CdTe QDs@MIPs	0-20 μM	31.1 nM	Turn-off (I_{536})
S2	Carbon QDs	0-30 μM	0.5 nM	Turn-off (I_{440})
S3	LDHs	1-200 μM	100 nM	Turn-off (I_{506})
S4	CdS QDs	0.72 μM	--	Turn-off (I_{505})
S5	ZnSe QDs	0-250 μM	7 nM	Turn-on (I_{480})
	ZnSe@ZnS QDs	0-250 μM	5 nM	Turn-on (I_{490})
S6	PVA- CdTe QDs	--	42.29 ng/mL (I_{442}/I_{363})	ratiometric
S7	AuNCs@BSA	--	18.3 ng/mL	Turn-off (I_{629})
S8	AuNPs & AuNCs	0.11-2.27 μM	290 nM	Turn-off (I_{625})
This work	AuNCs@MUA	0-20 μM	26 nM (I_{446}/I_{436})	ratiometric

References in ESI

- [S1] A.A. Ensaifi, P. Nasr-Esfahani, B. Rezaei, Simultaneous detection of folic acid and methotrexate by an optical sensor based on molecularly imprinted polymers on dual-color CdTe quantum dots, *Analytica Chimica Acta*, 996 (2017) 64-73.
- [S2] M. Wang, Y. Jiao, C. Cheng, J. Hua, Y. Yang, Nitrogen-doped carbon quantum dots as a fluorescence probe combined with magnetic solid-phase extraction purification for analysis of folic acid in human serum, *Analytical and Bioanalytical Chemistry*, 409 (2017) 7063-7075.
- [S3] P. Liu, D. Liu, Y. Liu, L. Li, ANTS-anchored Zn-Al-CO₃-LDH particles as fluorescent probe for sensing of folic acid, *Journal of Solid State Chemistry*, 241 (2016) 164-172.
- [S4] S. Kundu, S. Maiti, T.K. Das, D. Ghosh, C.N. Roy, A. Saha, Exploiting the biomimetic and luminescence properties of multivalent dendrimer-semiconductor nanohybrid materials in the ultra-low level determination of folic acid, *Analyst*, 142 (2017) 2491-2499.
- [S5] I.A. Mir, K. Rawat, P.R. Solanki, H.B. Bohidar, ZnSe core and ZnSe@ZnS core-shell quantum dots as platform for folic acid sensing, *Journal of Nanoparticle Research*, 19 (2017) 260.
- [S6] S. Chakravarty, P. Dutta, S. Kalita, N. Sen Sarma, PVA-based nanobiosensor for ultrasensitive detection of folic acid by fluorescence quenching, *Sensors and Actuators B: Chemical*, 232 (2016) 243-250.
- [S7] B. Hemmateenejad, F. Shakerizadeh-shirazi, F. Samari, BSA-modified gold

nanoclusters for sensing of folic acid, Sensors and Actuators B: Chemical, 199 (2014) 42-46.

[S8] X. Yan, H. Li, B. Cao, Z. Ding, X. Su, A highly sensitive dual-readout assay based on gold nanoclusters for folic acid detection, Microchimica Acta, 182 (2015) 1281-1288.