Supporting information

Nanochannel based sensor for the detection of lead ions in traditional Chinese medicine

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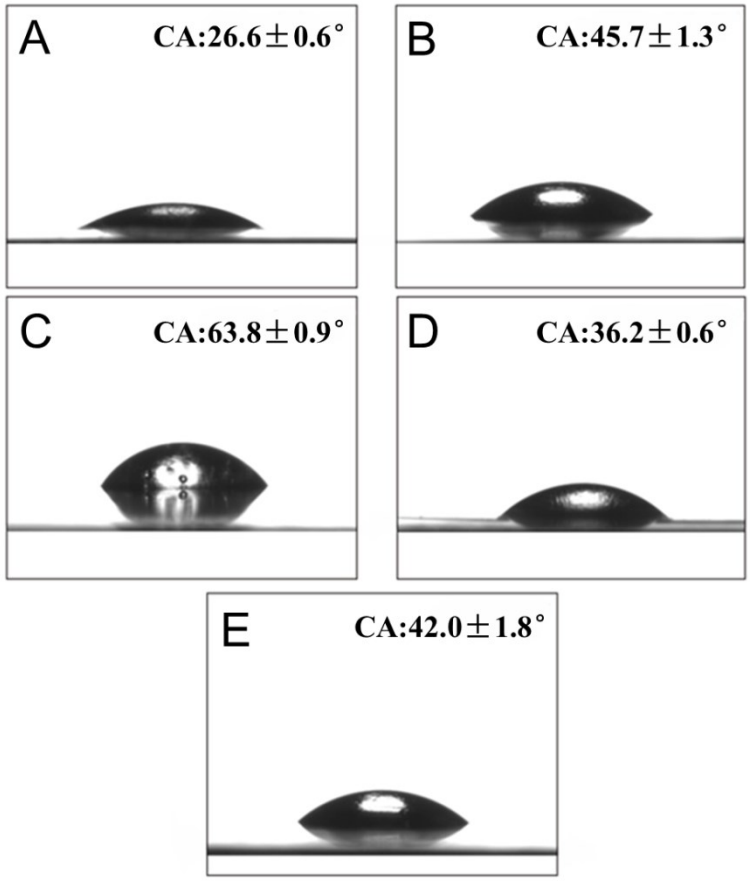

Fig. S1. Contact angle characterizations of the PAAM: bare (A), APTES and GA modification (B and C respectively), peptide-modification (D) and Pb^{2+}binding (E).

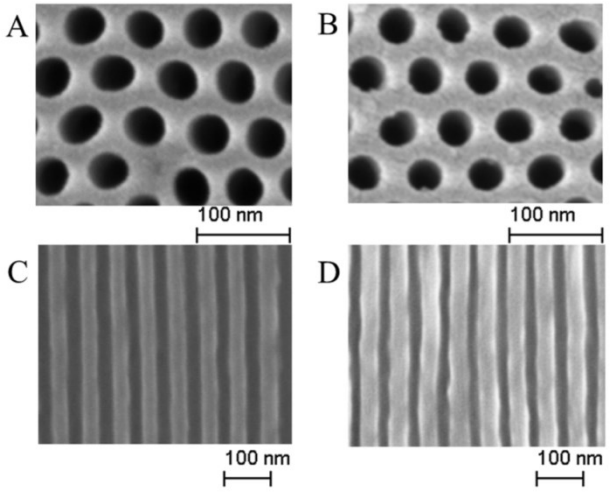

Fig.S2. SEM images of PAAM (A and B from vertical view, C and D from sectional view). Bare (A and C), peptide-modified PAAM (B and D).

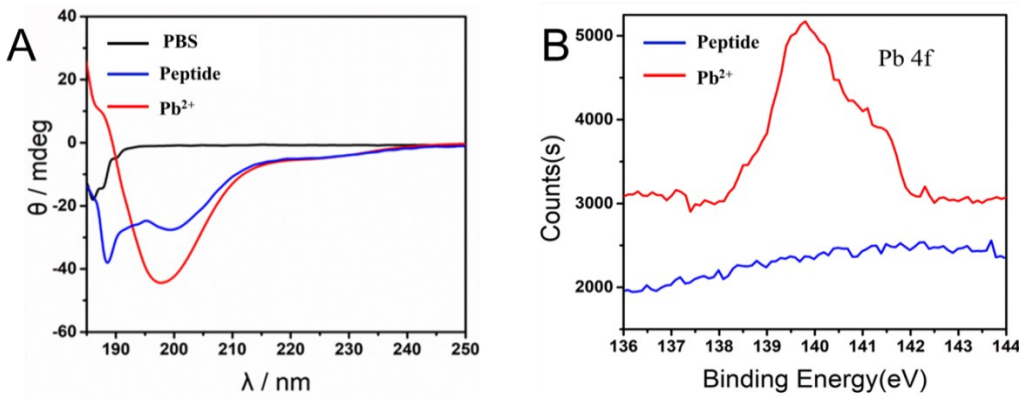

Fig. S3. (A)The CD spectra of PBS (black)，peptide (blue)，and peptide in the presence of Pb^{2+} (red). The concentrations of peptide and ions were 50 and 100 μM, respectively. (B)Narrow survey of lead element XPS analysis of peptide (blue) and peptide in the presence of Pb^{2+} (red).

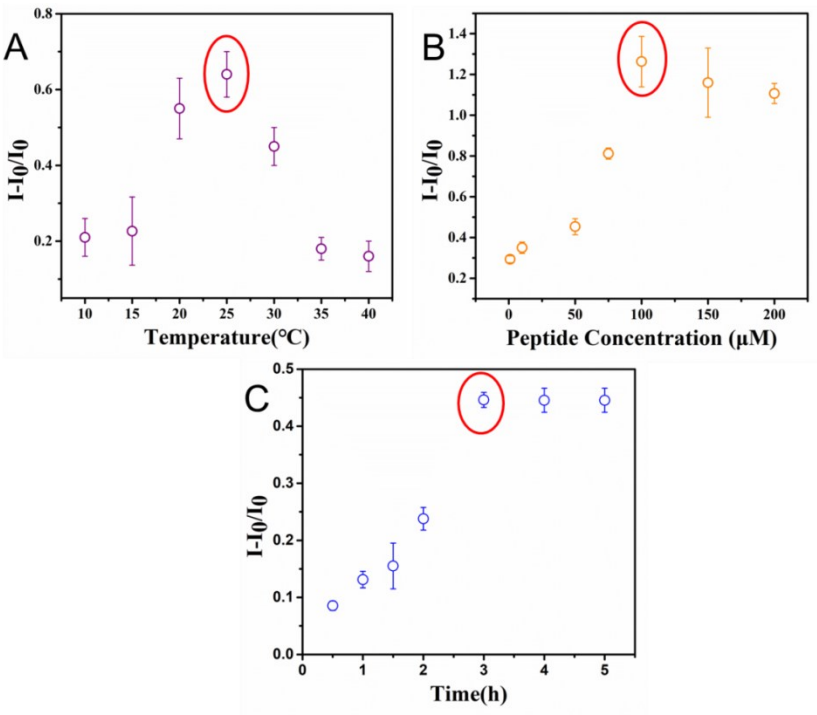

Fig. S4. The optimization of (A) modification temperature, (B) peptide concentration, (C) modification time. The assays were all carried out in the modification buffer (5 mMtris-HCl, 100 mMKCl). I_0 and I were measured at -1 V.

Table S1. Comparison of analytical performance for peptide modified nanochannelsensors

Materials (Methods)	LOD	Reference
Multiwalled carbon nanotubes	0.02μM	[1]
EDTA PANI/SWCNTs Nanocomposite modified electrode	1.65μM	[2]
Doped carbon dots	9.64μM	[3]
Fluorescence probe	50nM	[4]
Carbon dots fluorescence sensor	2.2 μM	[5]
Fluorescence sensor based on Graphene quantum dots and gold Nanoparticles	16.7 nM	[6]
Porous Ce-Zr oxide nanospheres	6 nM	[7]
Interlocked hexagonal	25 nM	[8]
Peptide-modified nanochannel sensor	5 nM	This work

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