

Article

Ultrasensitive Leaky Surface Acoustic Wave Immunosensor for Real-Time Detection of Alpha-Fetoprotein in Biological Fluids

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Supplementary Material

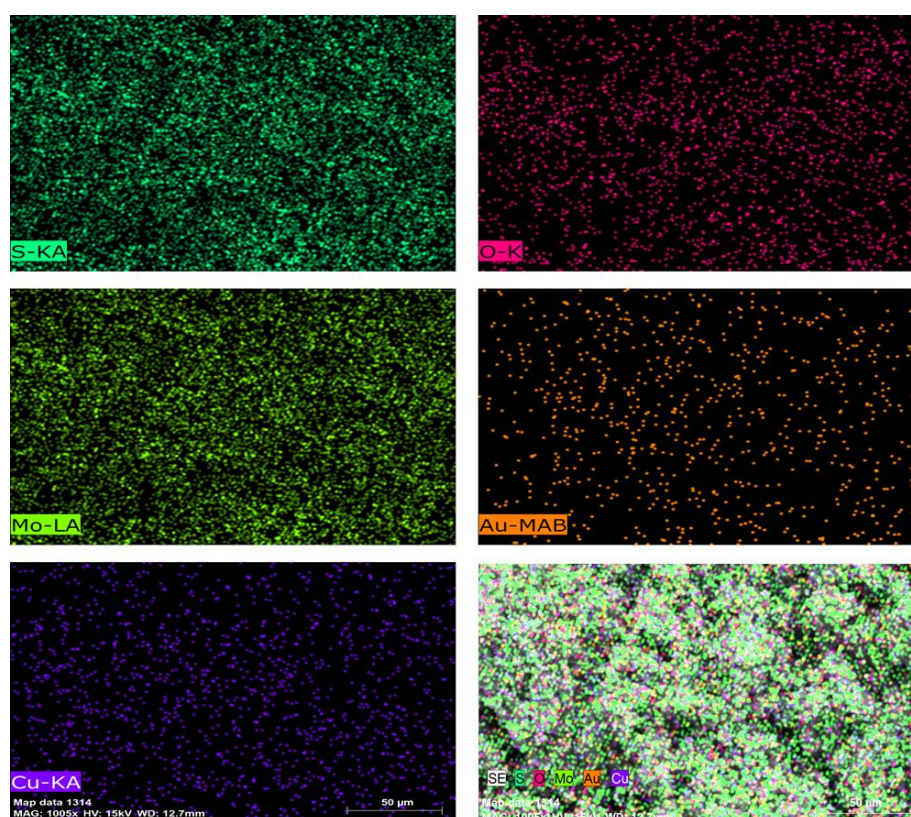


Figure S1. Elemental mapping of MoS₂@Cu₂O-Au using SEM.

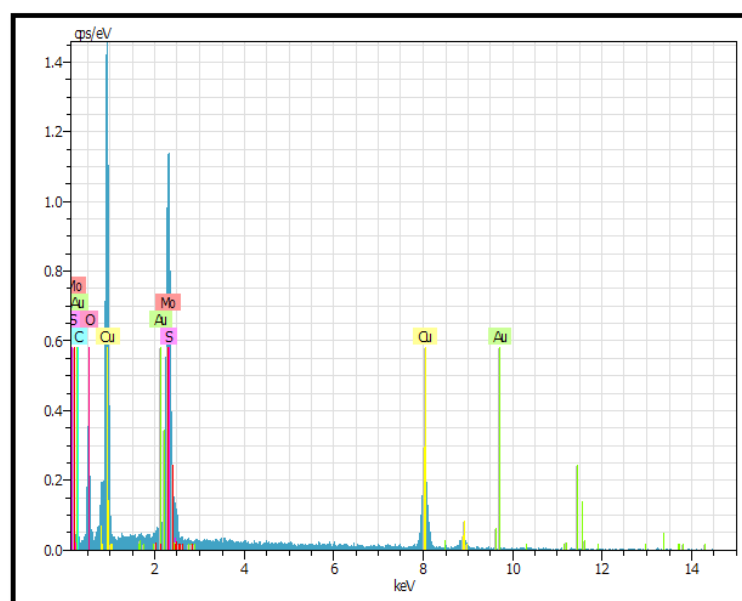


Figure S2. EDX spectra of MoS₂@Cu₂O-Au nanoparticles.

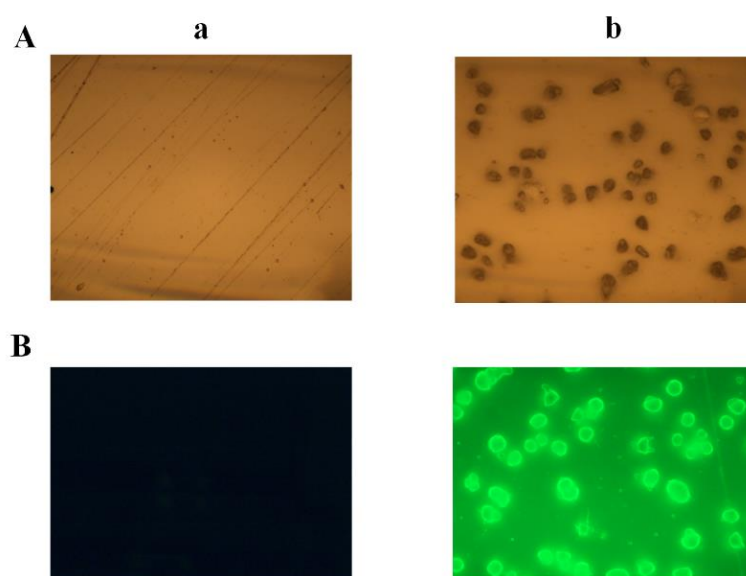


Figure S3. Optical microscopic images (A) of the delay line before (a), and after immobilization of Ab₁ (b); Optical microscopic images (B) of the delay line before (a), and after immobilization of FITC-Ab₁ (b).

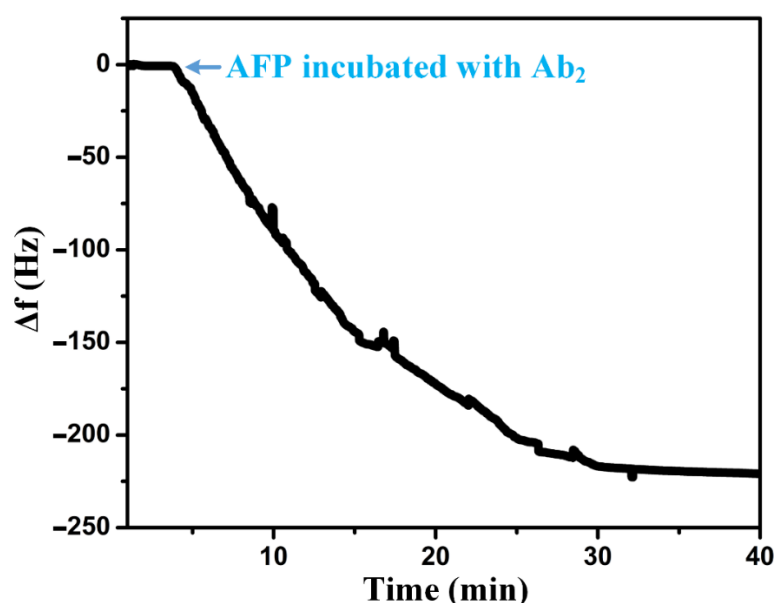


Figure S4. Frequency shift observed upon injection of AFP solution incubated with Ab₂ (secondary anti-AFP antibody).

Table S1. Comparison of other methods for detection of AFP with SAW based immunosensor.

Technique	Detection limit [†]	Biological sample used	References
Ultrasensitive label-free electrochemical immunosensor based on multifunctionalized graphene nanocomposites for the detection of alpha fetoprotein	2.7 fg/ml	Human serum sample	[1]
Detection of AFP with an ultra-sensitive giant magnetoimpedance biosensor	100 fg/ml	NA	[2]
Sandwich-type electrochemical immunoassay based on Co ₃ O ₄ @MnO ₂ -thionine and pseudo-ELISA method toward sensitive detection of alpha-fetoprotein	0.33 pg/ml	Human serum sample	[3]
A graphene oxide-based label-free electrochemical aptasensor for the detection of alpha-fetoprotein	3 pg/ml	Human serum sample	[4]
Micro-piezoelectric immunoassay chip for simultaneous detection of Hepatitis B virus and α -fetoprotein	0.1 ng/ml	NA	[5]
GTP as a peroxidase-mimic to mediate enzymatic cascade reaction for alkaline phosphatase detection and alkaline phosphatase-linked immunoassay	0.5 ng/ml	Serum sample	[6]
A piezoelectric immunosensor for the detection of α -fetoprotein using an interface of gold/hydroxyapatite hybrid nanomaterial	15.3 ng/ml	Human serum sample	[7]
Label-free electrochemical aptasensor for detection of alpha-fetoprotein based on AFP-aptamer and thionin/reduced graphene oxide/gold nanoparticles	50 ng/ml	Human serum sample	[8]
Development of a piezoelectric immunosensor for the detection of alpha-fetoprotein	50 ng/ml	Human serum sample	[9]
Ultrasensitive leaky surface acoustic wave immunosensor for real time detection of alpha-fetoprotein in biological fluids	5.5 pg/ml	Serum and saliva	This work

¹ All the LOD values are determined in the PBS buffer

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