



Středoevropský technologický institut, výzkumná skupina Chytré nanostroje  
 Laboratoř metalomiky a nanotechnologií, Mendelova univerzita v Brně



## Seminář/Seminar PRO\_5874

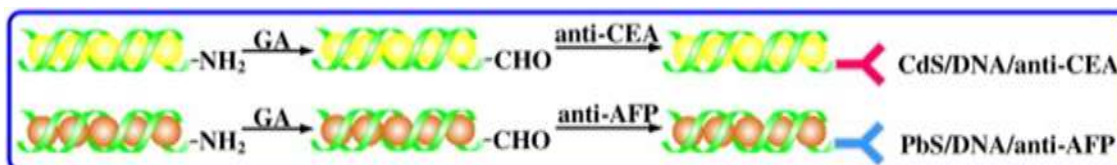
Vás zve na seminář:

### Simultaneous electrochemical immunoassay using CdS/DNA and PbS/DNA nanochains as labels - review

***RNDr. Lukáš Richtera, Ph.D., Doc. RNDr. Pavel Kopel, Ph.D.***

#### Abstrakt

An electrochemical method for the simultaneous detection of two different tumor markers, carcinoembryonic antigen (CEA) and  $\alpha$ -fetoprotein (AFP), in one-pot, using CdS/DNA and PbS/DNA nanochains as labels was developed. Herein, magnetic beads (MBs) as bimolecule immobilizing carriers, were used for co-immobilization of primary anti-CEA and anti-AFP antibodies. The distinguishable signal labels were synthesized by in situ growth of CdS and PbS nanoparticles on DNA chains, respectively, which were further employed to label the corresponding secondary antibodies. A sandwich-type immunoassay format was formed by the biorecognition of the antigens and corresponding antibodies. The assay was based on the peak currents of  $\text{Cd}^{2+}$  and  $\text{Pb}^{2+}$  dissolved from CdS and PbS nanoparticles by  $\text{HNO}_3$  using square wave stripping voltammetry. Experimental results show that the multiplexed electrochemical immunoassay has enabled the simultaneous monitoring of CEA and AFP in a single run with wide working ranges of  $0.1\text{--}100\text{ ng mL}^{-1}$  for CEA and  $0.5\text{--}200\text{ ng mL}^{-1}$  for AFP. The detection limits reach to  $3.3\text{ pg mL}^{-1}$  for CEA and  $7.8\text{ pg mL}^{-1}$  for AFP.



**09. 10. 2015, 15:00 h**

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