Vás zve na seminář:

NOVÉ ZPŮSOBY DETEKCE A ANALÝZY BIOMOLEKUL I

Semináře se zaměřují na využití moderních technologií pro analyzu biomolekul. Výsledky získané podporou projektu jsou zveřejněny ve zvláštním čísle časopisu Journal of Electrochemical Sciences.

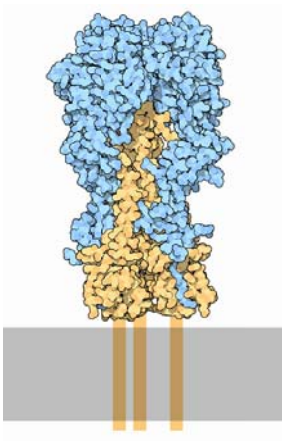
CHŘIPKOVÉ PROTEINY ZNAČENÉ KVANTOVÝMI TEČKAMI CdTe A CdS

10:00 – 11:30

MVDr. Ludmila Krejčová

Anotace/Annotation

Hemagglutinin (HA) or Haemagglutinin (BE) is an antigenic glycoprotein found on the surface of the influenza viruses. It is responsible for binding the virus to the cell that is being infected. The name "hemagglutinin" comes from the protein's ability to cause red blood cells (erythrocytes) to clump together ("agglutinate") in vitro. The process is like this: Hemagglutinin (HA) binds to the monosaccharide sialic acid which is present on the surface of its target host cells. The cell membrane then engulfs the virus through endocytosis and forms endosome. The cell then attempts to begin digesting the contents of the endosome by acidifying its interior and transforming it into a lysosome. When the pH within the endosome drops to 6.0, the HA molecule becomes partially unfold, and releasing a very hydrophobic portion of its peptide chain that was previously hidden within the protein. This so-called "fusion peptide" acts like a molecular grappling hook by inserting itself into the endosomal membrane and locking on. Then, when the rest of the HA molecule refolds into a new structure and pulls the endosomal membrane right up next to the virus particle's own membrane, causing the two to fuse together. Once this has happened, the viral RNA genome enters into the cell's cytoplasm.



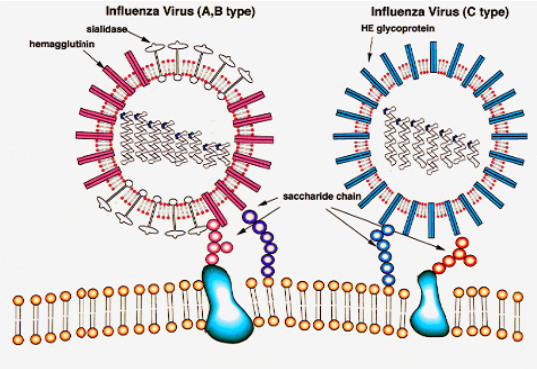
γ-Fe_2O_3 MAGNETIC CORE MODIFIED WITH TEOS AND APTES FOR IMMOBILIZATION OF H7N7 INFLUENZA VIRIONS

12:30 – 13:30

Mgr. Zbyněk Heger

Anotace/Annotation

The present paper describes the synthesis, characterization, and utilization of paramagnetic microparticles, integrating the magnetic properties of nanomaghemite, enhanced with modification using tetraethyl orthosilicate (TEOS) packaged in 3-aminopropyl triethoxysilan, to increase the selectivity of resulting single structured paramagnetic microparticles (PMPs).



Paramagnetic microparticles were characterized using X-ray fluorescence, and gas chromatography with thermal conductivity detector (TCD) to obtain information about their elemental composition. Further isolation steps for H7N7 influenza virions immobilization were optimized to achieve the ideal conditions for interactions, using ion-exchange liquid chromatography (IELC). Using this method, total amount of amino acids were obtained, showing the PMPs with largest H7N7 yields (527 µM/250 µL of H7N7 virions). Further electrochemical microscopy was employed to identify the electrochemical response of PMPs surface after binding of H7N7 virion. It was shown, that virion binding rapidly increases the relative current response of PMPs. Moreover presence of H7N7 influenza subtype was confirmed using SDS-PAGE (reducing conditions), where increased content of influenza proteins were determined on PMPs when compared with virion. Hence us-prepared PMPs may be applied as a preconcentration part of rapid and cheap biosensors, or Lab-on-a-Chip platforms.

13:30 – 14:00 - Diskuse a závěr , předání certifikátů

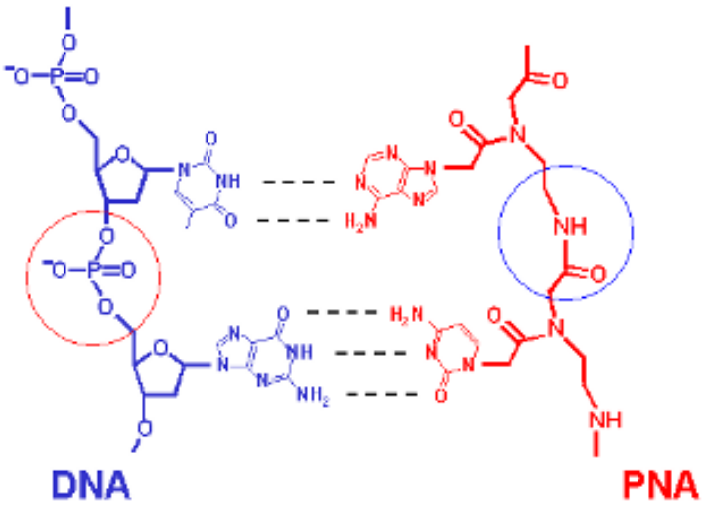
COMPARISON OF BRDICKA REACTION OF PNA INFLUENZA VIRUS MEASURED BY SQUARE WARE VOLTAMMETRY AND SQUARE WARE VOLTAMMETRY COUPLED WITH ADSORPTIVE TRANSFER TECHNIQUE

11:30 – 12:30

Nguien Viet Hoai, MSc.

Anotace/Annotation

PNAs as we know them today have a backbone made from repeating N-(2-aminoethyl)glycine units linked by peptide bonds. Unlike DNA and RNA, the backbone does not contain phosphate group. Since the first appearance in 1990s, PNAs received a lot of attentions because of their great properties, including stability in serum and cell extracts, high affinity for RNA and single and double stranded DNA targets, and resistance to nuclease and protease digestion. PNAs have many applications in molecular biology and antigene and antisense therapy . The present study investigated brdicka reaction of PNA influenza virus measured by square wave voltammetry (SWV) and square wave voltammetry coupled with adsorptive transfer technique (AdT SWV). Effect of accumulation time, concentration of PNA, and temperature of brdicka electrolyte on the signal of brdicka reaction of PNA was monitored.



14. 02. 2014, začátek v 10:00 – 14:00 h
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