

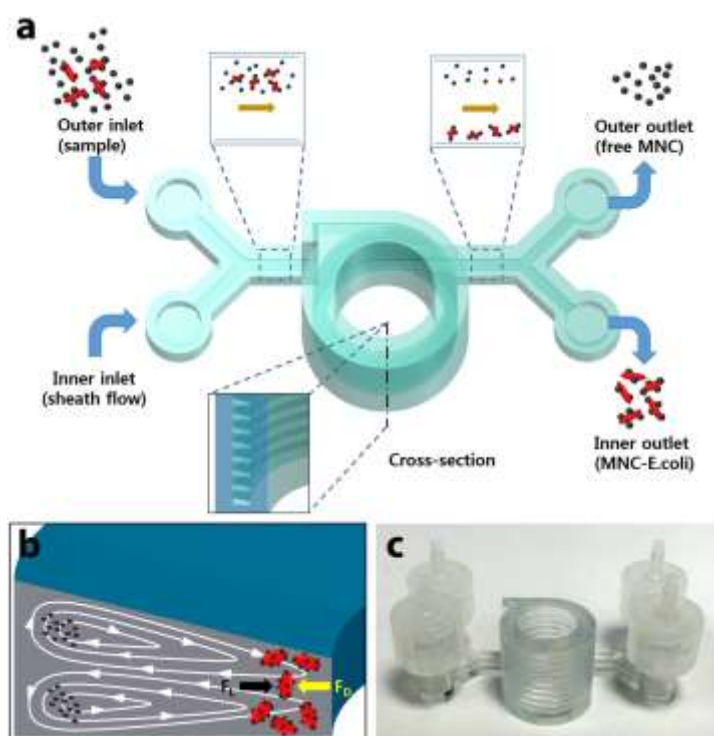
Vás zve na seminář:

## 3D-Printed Microfluidic Device for the Detection of Pathogenic Bacteria Using Size-based Separation in Helical Channel with Trapezoid Cross-Section

*Ing. Kristýna Číhalová*

### Abstrakt

A facile method has been developed to detect pathogenic bacteria using magnetic nanoparticle



clusters (MNCs) and a 3D-printed helical microchannel. Antibody-functionalized MNCs were used to capture *E. coli* (EC) bacteria in milk, and the free MNCs and MNC-EC complexes were separated from the milk using a permanent magnet. The free MNCs and MNC-EC complexes were dispersed in a buffer solution, then the solution was injected into a helical microchannel device with or without a sheath flow. The MNC-EC complexes were separated from the free MNCs via the Dean drag force and lift force, and the separation was facilitated in the presence of a sheath flow. The concentration of the *E. coli* bacteria was determined using a light absorption spectrometer, and the limit of detection was found to be 10 cfu/mL in buffer solution and 100 cfu/mL in

milk.

**19. 06. 2015, od 14:00**

Ústav chemie a biochemie, Laboratoř metalomiky a nanotechnologií, Zemědělská 1, 613 00  
Brno

Kontakt: [kizek@sci.muni.cz](mailto:kizek@sci.muni.cz)