REGIONAL CENTRE
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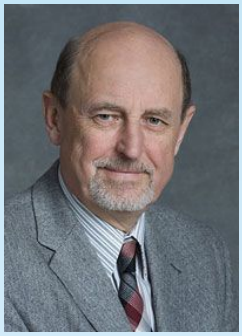
Regionální centrum pokročilých technologií a materiálů

REGIONAL CENTRE OF ADVANCED TECHNOLOGIES AND MATERIALS

RUDOLF ZAHRADNÍK LECTURE

General Director of RCPTM cordially invites you to the lecture
in the framework of **RUDOLF ZAHRADNÍK LECTURE SERIES**
This talk will be delivered by



Prof. František Švec
(Lawrence Berkeley National Laboratory)

BERKELEY LAB

„New trends in the preparation and application of porous polymer monoliths in chromatography"

Thursday, June 9, 2016, 12:20pm, assembly hall of Faculty of Science, 17. listopadu 12, Olomouc.

František Švec undertook his PhD in polymer chemistry at the Institute of Chemical Technology in Prague, then he became an Assistant Professor at the Institute and also held a position as visiting scientist at the University of Karlsruhe in Germany. In 1976 he joined the Institute of Macromolecular Chemistry at the Czech Academy of Sciences in Prague where he worked as a department head and technology transfer manager. In 1992 he moved to Cornell University in New York State followed by a move to the University of California, Berkeley in 1997. In 2005 he became the Director of the Organic and Macromolecular Synthesis Facility at the Molecular Foundry of the Lawrence Berkeley National Laboratory. Main scientific focus of Prof. Švec is the development of polymeric stationary phases and their adaptation to column and chip formats used in many branches of analytical chemistry, especially in separation science. The pivotal approaches he has pioneered for the fabrication of monolithic supports and functionalized polymer beads have been adopted widely by numerous commercial organisations and exemplifies the practical and important nature of his work. As an author, he has over 400 publications and 50 book chapters and review articles, 3 books and 79 patents.

Abstract: The modern monolithic columns emerged more than two decades ago. While the early polymer-based monoliths were used for the rapid separations of proteins, current literature describes a number of different applications in addition to typical liquid chromatography demonstrating versatility of the monoliths. For example, monolithic columns prepared using hypercrosslinking possess a large surface area in numerous mesopores and enable efficient rapid separation of small molecules. New chemistries are being developed to produce monolithic columns for the separation in various chromatographic modes. Modification of pore surface with nanostructures is another recent trend that extends applications of monoliths in the arena of highly selective systems. Recently, a new approach was introduced that enables functionalization of pore surface of monoliths and involves application of metal-organic frameworks (MOFs). These frameworks are compounds consisting of metal ions or clusters coordinated to rigid organic molecules to form one-, two-, or three-dimensional that can be porous. We used two implementations: (i) admixing preformed MOF to the polymerization mixture followed by the thermally initiated free radical polymerization and (ii) forming the MOF within the pores applying layer-by-layer approach. Monoliths also serve as supports for immobilization of enzymes to form very active enzymatic reactors.