ADLERSHOFER KOLLOQUIUM

Topic: Microarray technologies with antibodies, oligonucleotides, and nanoparticles

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Branch Adlershof, Richard-Willstätter-Str. 11, 12489 Berlin
Building 8.05 / Lecture Hall

Summary: Multi-analyte immunoassays on microarrays and on multiplex DNA microarrays have been described for quantitative analysis of small organic molecules (e.g., antibiotics, drugs of abuse, small molecule toxins), proteins (e.g., antibodies or protein toxins), and microorganisms, viruses, and eukaryotic cells. In analytical chemistry, multi-analyte detection by use of analytical microarrays has become an innovative research topic because of the possibility of generating several sets of quantitative data for different analyte classes in a short time. This lecture will deal with developments based on antibodies, oligonucleotides and nanoparticles. As readout technique fluorescence, chemiluminescence, and surface-enhanced Raman emission will be discussed.

Microarrays are powerful tools for rapid multiplex analysis of complex matrices. A wide range of applications for microarrays is described in the literature dealing with analytical microarrays. The motivation for this presentation is to summarize the current state analytical microarrays. Combining analysis of different compound classes on microarrays reduces analysis time, cost of reagents, and use of laboratory space. Applications are discussed, with examples from food safety, water safety, environmental monitoring, diagnostics, forensics, toxicology, and biosecurity. The potential and limitations of research on multiplex analysis by use of microarrays are discussed.