

# SERION Multianalyt™ Technology

## Multiplex Analysis for Flow Cytometry

The SERION Multianalyt™ technology allows the simultaneous quantification of multiple parameters in a small sample volume using flow cytometry. The technique is based on polystyrene particles of varying size and fluorescence properties. Each particle population is coated with a specific capture molecule. Bound analytes are tagged with fluorescent detector reagents. The easy to handle and automatable technology allows the generation of innovative, time- and labor-saving solutions for many applications in modern research and diagnostics.



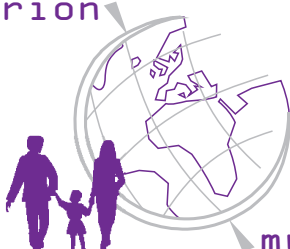
SERION Multianalyt™ Particle Plex.

### Technology

The SERION Multianalyt™ technology is based on 1 to 10  $\mu\text{m}$  sized polystyrene particles which are used as the solid phase for immunoassays in the SERION Multianalyt™ product line. The beads are dyed with a fluorophore in ten different intensity steps. The use of the color coding in combination with the variable size of the particles leads to optically distinguishable bead populations. The differentiation of the particles in a flow cytometer allows the simultaneous performance of up to 40 different immunoreactions in one set up.

The covalent fixation of proteins, peptides or even nucleic acids is possible due to a surface modification on the polystyrene particles. Each particle population can be coated with a different capture molecule, for which purpose a simple and established coupling technology is available.

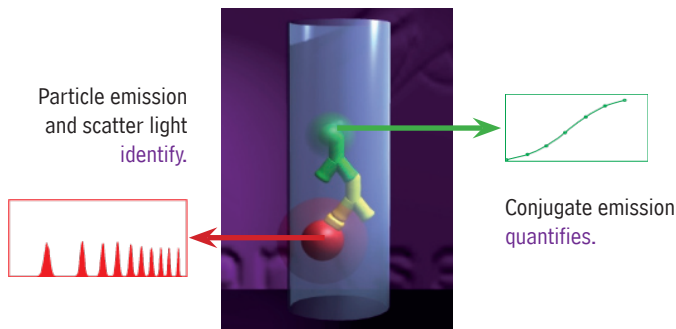
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## Assay Performance

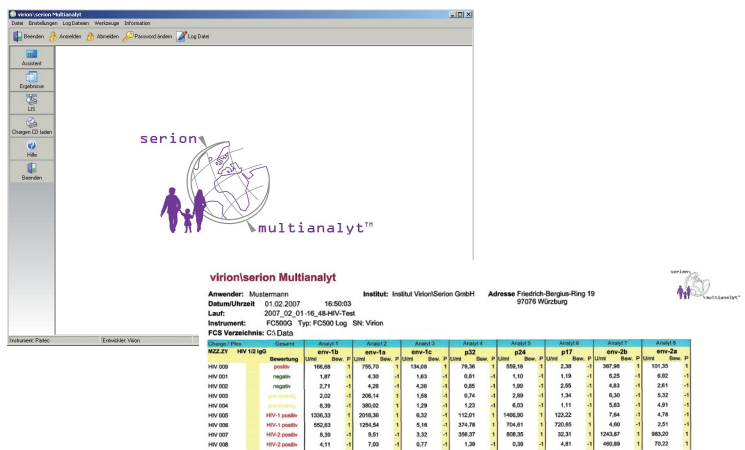
The analysis is performed in the cavities of a microtiter plate and starts with the addition of a prepared particle suspension to a diluted sample preparation. Subsequently, the analyte of interest binds to the solid phase. In a multiplex test performance various particle populations are mixed with the diluted sample. The higher the concentration of the analyte, the more molecules bind to the capture molecule coated on the surface of the particles. In a second step, a detector molecule, usually an antibody with a high specific affinity to the analyte, is added to the reaction mixture. The detector is labelled with another fluorescent dye. The use of fluorophores with high quantum efficiency, such as Phycoerythrin, guarantees a high sensitivity in the immunoreaction. Thereby, analysis of solutions with low analyte concentration as well as highly diluted samples can be performed. The use of a multiplexing test system requires very low sample quantities.



Design of a SERION Multianalyt™ immunoassay:  
Analytes, here an immunoglobuline, bind to the coated particle surface and are tagged by a detector molecule.

## Analysis

In a flow cytometer particles are separated and precisely gated through the focus of the laser-based detection system. The identification of the particles is performed by the scattering of light and by fluorescence intensity. Each particle is analysed individually. The analysis of more than a hundred particles per population assures the results statistically and guarantees the high reproducibility of the data. The fluorescence intensity of the bound detector molecule is proportional to the concentration of the analyte in the sample. Flow cytometers are able to analyse thousands of particles per second. Consequently, the measurement of a sample is performed in a few seconds.



## Evaluation

The SERION Multianalyt™ technology is suited for use with different, commercially available flow cytometers. The measured signal intensities of a multiplex immunoreaction can be conveniently evaluated with the software SERION easyPLEX, independent from the flow cytometer used.

## Order Information

**SERION Multianalyt™ Setup**  
**SERION Multianalyt™ FlowControl**  
**SERION easyPLEX**

**Order Nr.: MK 2000**  
**Order Nr.: MA 3000**  
**Order Nr.: VT 018**

Please visit our website [www.virion-serion.com](http://www.virion-serion.com) for more information on our SERION Multianalyt™ products.

Institut Virion\Serion GmbH  
Serion Immundiagnostica GmbH  
Friedrich-Bergius-Ring 19  
97076 Würzburg, Germany

Tel.: +49 (0)931 3045-222  
Fax: +49 (0)931 3045-100  
dialog@virion-serion.de  
www.virion-serion.com

Institut Virion\Serion GmbH  
Beijing 100005, China  
www.virion-serion.cn