

# Rapid SPR-System for parallel detection of pathogens in blood

T. Velten<sup>a</sup>, T. Knoll<sup>a</sup>, RaSP Consortium<sup>b</sup>

<sup>a</sup> Fraunhofer Institute for Biomedical Engineering, Sankt Ingbert, GERMANY

<sup>b</sup> also including: University of Budapest, Hungary, University of Birmingham, UK, University of Regensburg, Germany, The Holding Company for Biological Products and Vaccines, Egypt, MikroMikoMed Ltd., Hungary, Institute for Analytical Sciences, Dortmund, Germany, Mivitec GmbH, Germany, V.Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine

## Introduction/Problem

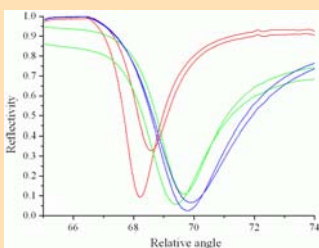
Blood transfusions bare the risk of transmitting diseases.

An urgent need exists to test donor blood in a cheap and fast way, especially in less developed countries where the rate of infected blood is high due to high prevalence of diseases such as HIV, hepatitis C, hepatitis B, and syphilis.

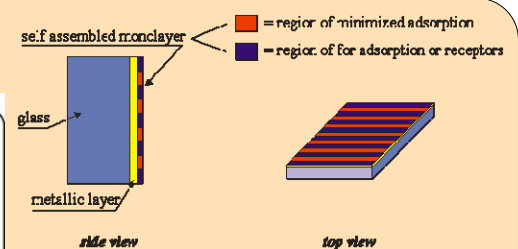
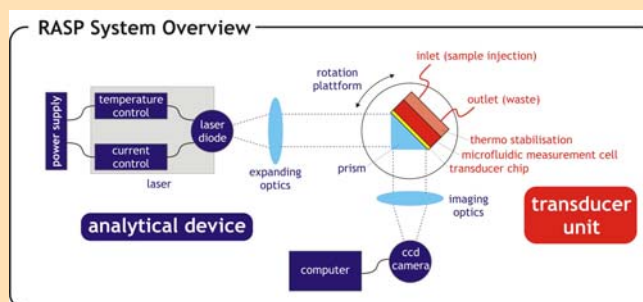
## Aim

- Immunosensing diagnostic assay, which can be used without labels and amplification
- A new type of surface plasmon resonance (SPR) transducing principle will be exploited
  - using distributed sensing and reference spots
  - using improved gold layers
- The main achievement will be the multiple specificity of the chip
- The output of the system is the information if any of the four pathogens is present in the blood sample

## Technical approach



Reflectivity of improved gold coatings  
Blue: standard slides (Mivitec GmbH)  
Green / red: improved gold coatings (red: FWHM is 35% of standard slides)



Distributed sensing and reference spots  
Top: schematic overview.  
Bottom: picture of spots/lines with areas marked by the software

Contact: Dr. Thomas Velten,

phone : +49 6894/980301

e-mail: [thomas.velten@ibmt.fraunhofer.de](mailto:thomas.velten@ibmt.fraunhofer.de)

Project webpage: [www.rapid-spr.com](http://www.rapid-spr.com)



Fraunhofer Institut  
Biomedizinische  
Technik