



Master Thesis

Analysis of Biofilm Formation with a Novel Diffraction-Based Biosensor

Position description:

The formation of biofilms causes severe problems in several fields such as industry, healthcare and antibiotic resistance [1]. Biofilms can hereby cause corrosion on aquatic installations or be the reason for severe infections inside the human body. One of the reasons of the latter is that biofilms can resist concentrations of antibiotics hundreds or even a thousand times higher than their counterparts in suspension [2].

To understand and control the growth of biofilms on a number of different surfaces, the bacterial growth and motility shall be analyzed with our patented, highly sensitive detection method. This method, which can detect surface coverage and bacterial motility in real-time will be used to analyze the formation of biofilms on different

surfaces and to study the resistance to antibiotics depending on the state of the biofilm.

You'll learn:

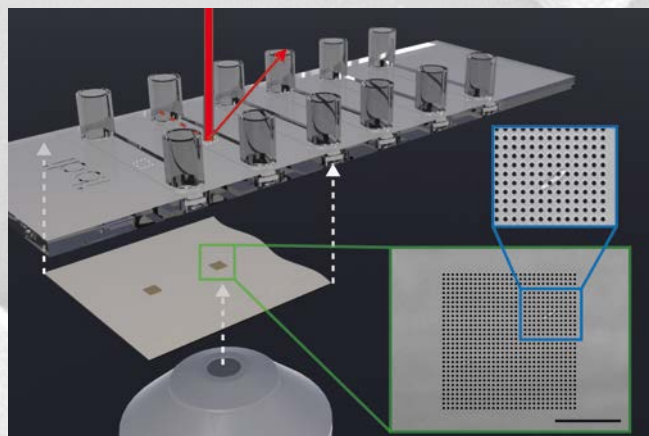
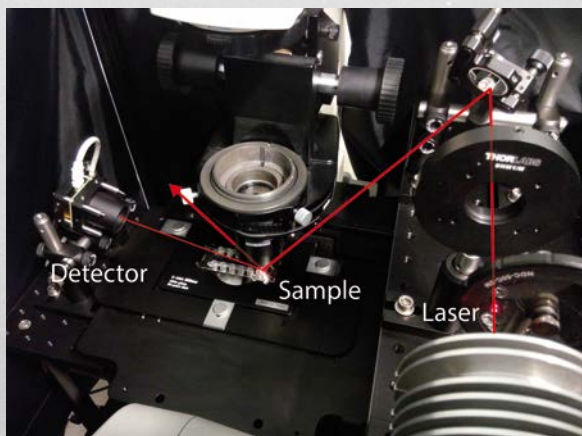
- semi-conductor fabrication techniques in our in-house clean room for our nanostructures sensor device
- bacterial cell handling and cultivation
- high-throughput antibiotics measurements and analysis of biofilm forming

Your qualifications:

- highly motivated
- basic knowledge in optics
- strong academic background

If you are interested, please contact us:

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- [1]: Simoes, Manuel, Lúcia C. Simões, and Maria J. Vieira. "A review of current and emergent biofilm control strategies." *LWT-Food Science and Technology* 43.4 (2010): 573-583.
- [2]: Stewart, Philip S., and J. William Costerton. "Antibiotic resistance of bacteria in biofilms." *The lancet* 358.9276 (2001): 135-138.