



# Seminarankündigung

**Dienstag, 31. Mai 2016  
17:15 Uhr**

**WSI, Seminarraum S 101**

## **“Bioengineering and Physics: Two worlds in close contact”**

Bioengineering is a science that studies the application of concepts of the exact sciences and engineering to solve problems of biological sciences. Physics is a science that provides the greatest number of concepts, that can be developed and applied in bioengineering. Particularly, in the area of biosensors, nanotechnology has made many advances in the development of specific sensors that detect increasingly lower concentrations of the interest analyte. In recent years, semiconductor and metal oxides nanostructures have been increasingly employed in sensing devices due to their large specific surface area and novel charge transport properties. Electrochemical biosensors are the most widely developed. One of these important applications includes biosensors for glucose level detection in the human body, although, applications for environmental and agricultural determinations are also widely developed. Thus, sensitive devices capable of determining accurately and reproducibly low concentrations of analytes, as non-invasively as possible, and as fast as possible, are very desirable. In this sense, different nanostructures have been explored to increase the sensitivity of electrochemical biosensors.

On the other side, the fusion of analytical techniques and microelectronic technologies resulted in the birth of microfluidics. Once more, physical and chemical scale effects, and many other physical concepts, like lower thermal inertia, low Reynolds numbers, or the use of much higher electric fields for electrophoretic separations, could be taken into advance for the development of microfluidic chips for the most varied number of applications. Microfluidic systems can integrate all analytical steps, and even biosensors, into a single automated platform, the so called "lab-on-chip". Both worlds, physics and bioengineering are integrated in a single device with a single purpose, to improve the life quality of all people.

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