

## Critical stages of a biosensor development from sensor chip fabrication to surface chemistry and assay development

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Once viewed solely as a tool to analyse biomolecular interactions, biosensors are gaining widespread interest for diagnostics, environmental and quality assurance in agriculture/food industries. Biosensors consist of three fundamental components, a receptor, a transducer and an analyzer. While a label is needed for some of the transducers to detect a biological activity between a receptor and its analyte, label-free technologies such as surface plasmon resonance and piezoelectric sensors do not. Advanced micro fabrication techniques have facilitated integration of microfluidics with sensing functionalities on the same chip making system automation more convenient. Biosensor devices relying on lab-on-a-chip technologies and nanotechnology has attracted much of attention in recent years for life sciences research and diagnostics. However, compared with the numerous publications and patents available, the commercialization of biosensor technology has significantly lagged behind the research output. This presentation reviews the reasons behind the slow commercialisation of biosensors with an insight to the critical stages of a biosensor development from the sensor chip fabrication to surface chemistry applications and nanotechnology applications in sensing with case studies for DNA, cancer biomarker and pathogen detection assays.

### Biography

Yildiz Uludag has degree in chemical engineering (BSc; METU, Turkey), biotechnology (Ph.D.; Cranfield University, UK) and more than 10 years of professional experience in the area of biosensors. Dr. Uludag worked at two University of Cambridge spin-off companies (Affinity Sensors and Akubio Ltd.) at different positions. Currently she holds a senior researcher position at UEKAE-TUBITAK. Not only did she use different commercial biosensor instruments (optical, piezoelectric and electrochemical) but was also involved in the development of new biosensor devices and sensor chips from prototype to commercial products, and some of the products she developed, or was involved in its production are in the market.

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