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Progress on the studies on visual detection and surface modification testing of glass microfiber filter based biosensor

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One major role in BioMEMS studies is defining new biological testing subject matters for the current test devices and exploring new fields of research that could be integrated to the ongoing studies in the BioMEMS field of research. For this purpose, microfiber glass paper-based microfluidic devices were offered as a proper new field of research that has a promising, simple application in media. Instead of a device construction, searching for the possibilities of the use of the material for biological material detection and surface modification options were investigated. For this purpose, 3-aminopropyltriethoxysilane (APTES) modification of the surfaces was successfully applied and detected after a basic microbiological staining technique, namely Gram staining, through the improvement in the binding amount of *S. Cerevisiae* on the surfaces. Afterwards, APTES-modified samples were further tested for binding of complementary DNA sequences and visualized by using a fluorescent stain, YOYO-1. When there were no surface modifications, DNA and YOYO-1 adsorbed on the glass microfiber filter paper, and prolonged the interaction between DNA and YOYO-1. YOYO-1 adsorption on glass could be recognized from the color of YOYO-1 emission. This phenomenon was offered to be a potential approach for examining the suitability of APTES coverage on glass surfaces since YOYO-1 emission can be distinguished by its glass adsorbed versus DNA-bound forms. This work, which was published in *Biosensors & Bioelectronics* 54 (2014) 27-34, will be presented, along with the unpublished new results and relevant discussion.

Biography

Yekbun Adigüzel completed her PhD at the Biophysics Department of the Ruhr-University of Bochum, Germany, in 2008, and involved in postdoctoral studies at the Neurobiochemistry Department of the same university. She is now a faculty member at the İstanbul Kemerburgaz University Medical Faculty, Turkey, and studied as a postdoctoral scientist at the BioMEMS division of the METU-MEMS Research and Application Center, during the major part of this work.

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