Micromechanical PDGF recognition via lab-on-a-disc aptasensor arrays - DTU Orbit

**Micromechanical PDGF recognition via lab-on-a-disc aptasensor arrays**

A plug-and-play CD-like platform is used to perform a statistical detection of platelet derived growth factor (PDGF) proteins through aptamer-based surface functionalization of multiple microcantilever arrays. When PDGF proteins bind to aptamer coatings, the cantilevers deflect. The deflection response is monitored by optical read-out units from a commercial DVD-ROM device. We report on the use of an improved sensing platform which facilitates measurements under continuous liquid flow and with temperature control. Also, the mechanical wobbling of the DVD-ROM platform has been minimized and the scanning system has been optimized in order to detect cantilever deflections in liquid with nanometer scale resolution. The capability of the sensing platform is demonstrated by detection of clinically relevant concentrations of PDGF proteins. We present statistical measurements on 100 microcantilevers at different concentrations of PDGF, ranging from 10nM to 400nM. Hereby it is possible to reliably characterize the averaged mechanical response of cantilevers as a function of protein concentration.

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