Integrated optical measurement system for fluorescence spectroscopy in microfluidic channels - DTU Orbit (24/12/2018)

**Integrated optical measurement system for fluorescence spectroscopy in microfluidic channels**

A transportable miniaturized fiber-pigtailed measurement system is presented which allows quantitative fluorescence detection in microliquid handling systems. The microliquid handling chips are made in silica on silicon technology and the optical functionality is monolithically integrated with the microfluidic channel system. This results in inherent stability and photolithographic alignment precision. Permanently attached optical fibers provide a rugged connection to the light source, detection, and data processing unit, which potentially allows field use of such systems. Fluorescence measurements with two dyes, fluorescein, and Bodipy 650/665 X, showed good linear behavior over a wide range of concentrations. Minimally detected concentrations were 250 pM for fluorescein and 100 nM for Bodipy.

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