

Continuous monitoring of metabolites in biofluids relevant for clinical chemistry and biotechnological applications using mid-infrared ATR and transmission spectroscopy

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Abstract:

Infrared spectroscopy is a versatile method for quantification of low concentration substrate and metabolite compounds. Two options have been followed up, i.e. the employment of mid-infrared fibre-optic probes to allow for remote sensing application based on attenuated total reflection and the second one, rendering even lower detection limits, is the use of transmission measurements in combination with a programmable micro-fluidic system. Examples comprise the surveillance of biomass fermentation and the continuous monitoring of the blood glucose level and of urea and lactate concentrations in the subcutaneous interstitial fluid using a skin-implanted micro-dialysis probe, intended for hospitalised patients.