

Monolithic Fabrication of Wireless Miniaturized Quartz Crystal Microbalance (QCM-R) Arrays and their Application for Biochemical Sensors

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We report on a novel wireless quartz crystal microbalance sensor array with integrated microcoils for remote readout (QCM-R). It consists of miniaturized quartz crystal microbalances solely fabricated by microfabrication batch processes including wet chemical thinning of quartz membranes, electroplating of microcoils through lithographic masks and via interconnections through the quartz substrate. Measurements with varying distance between the QCM-R and readout coil showed the resonant frequency independence of the coupling. Experiments with immobilized protein A and the adsorption of its antibody proved the excellent performance of the system.

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