

## Detection of *E. coli* O157:H7 using Quartz Crystal Microbalance Method

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A simple method, based on self-assembled monolayer (SAM) for immobilization of antibodies onto gold electrodes of a quartz crystal microbalance (QCM), was investigated for detecting *E. coli* O157:H7. The gold surface on the crystal was modified with homobifunctional cross linker dithiobis succinimidylpropionate (DSP) to form a self-assembled monolayer by its disulfide group. It hence achieved accessible antibody coating through N-hydroxysuccinimide (NHS) ester reactions with primary amines with covalent bonding. The binding of target bacteria onto the immobilized antibodies decreased the crystal resonant frequency. The difference on frequency between the baseline of phosphate buffered saline (PBS) and adjacent stable line of injected sample was calculated as a function of bound bacteria. The results of this study showed QCM sensor had potential to detect *E. coli* O157:H7 cells at a level of  $10^2$  CFU/ml.