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An impedance biosensor for rapid detection of low concentration of *Escherichia coli* O157:H7

This presentation will provide an overview of the food safety testing requirements for ready to eat (RTE) food, and raw (NRTE) food, and will discuss the recent impedance biosensor developments in my group for rapid and simultaneous detection of single and multi-pathogens in poultry. The device initially focuses and concentrates the bacteria into the centerline of the microchannel, and directs them toward the sensing region. The bulk media will be directed to the waste outlets through the outer channel. The bacteria will then be trapped on top of the sensing region using trapping electrodes which confine and facilitate the contact and binding of salmonella antigens with salmonella antibody immobilized on the detection electrodes. Various low concentration *E.coli* and *Salmonella* samples were tested with and without the trapping electrodes to determine the sensitivity of the biosensor. The lowest measured concentration of Salmonella cells was found to be 13 cell/ml with a detection time of 30 minutes.

Biography

Mahmoud Almasri received BSc and MSc degrees in physics from Bogazici University, Istanbul, Turkey, in 1995 and 1997, respectively, and a PhD in electrical engineering from Southern Methodist University (SMU), Dallas, TX, in 2001. He is currently an associate professor with the Department of Electrical Engineering and Computer Science, University of Missouri. From 2001 to 2002 he was a research scientist with General Motors, Lake Forest CA. From 2002 to 2003 he was with College of Nanoscale Science and Engineering Albany, NY, as a post doctoral research associate, and from 2004 to 2005 he was with Georgia Institute of Technology as a post doctoral fellow, and a research scientist. His current research include impedance biosensors, MEMS capacitors for power harvesting, Si-Ge-O infrared material, metasurface based uncooled IR detectors, and MEMS Coulter counter for studying time sensitive cell. His research is funded by agencies such as NSF, USDA, ARO, Leonard Wood Institute, and Coulter Foundation.

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