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A novel leaky surface acoustic wave (LSAW) biosensor for label-free detection of Hepatitis B surface antibody (HBsAb)

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As a potential biochemical sensing platform, leaky surface acoustic wave (LSAW) biosensor consists of a special orientation of a piezoelectric crystal and shows superb sensitivity, speed and reliability. In this work, a novel label-free LSAW biosensor for detecting hepatitis B surface antibody (HBsAb) is fabricated. The sensing area of LSAW is coated with 500nm thick gold membrane on 100MHz LiTaO₃ piezoelectric single crystal. Then the hepatitis B surface antigen (HBsAg) is immobilized on the surface of gold electrode. The phase shift of LSAW is monitored to detect HBsAb, which increases the mass loading of LSAW by binding to immobilized HBsAg. A reference LSAW device is immobilized with bovine serum albumin (BSA) to block binding of HBsAb. This sensor shows great specificity and sensitivity in detecting HBsAb.

Biography

Hong-Yu Yu has been with the Dept. of EEE of SUSTC since Oct/2011. He received a BEng degree from Tsinghua University, a MSc degree from University of Toronto, and a PhD degree from National University of Singapore. From 01/2008 to 09/2011, he was with school of EEE/Nanyang Tech. Uni. From 06/2004 to 01/2008, he was with IMEC (Leuven Belgium) as a Senior Researcher in the Si process and device technology division. His current major research interests cover sustainable electronic devices, including low-power IC/memory devices, bio-electronics and green photonics / solar cell devices. He has authored or co-authored ~ 300 publications in the top-tier international journals and conferences, with a total citation over 2000 times (SCI) and with an H index of 28. He has been invited to give talks in more than 20 international conferences, and to write 4 book chapters. He also has published / been granted with more than 20 USA/EU patents. He is an IET fellow, and has received many awards.

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