

Seminar Talk

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3:00 p.m. KH 224

Title: Enhanced Sensing Performance of ZnO Nanostructure Gas Detectors

Abstract:

ZnO is a well-known Metal Oxide Semiconductor (MOS) material used in gas sensor applications due to its good electrical property, wide band gap of 3.37 eV, ~60 meV exciton binding energy, low cost, and high mechanical stability. Especially, ZnO nanorod structure is widely investigated in gas detection due to its high surface-to-volume ratio, nontoxicity, and suitable doping. Three methods applied to enhance the sensing performance of ZnO nanostructure gas sensors were investigated. Also, to investigate the sensing performance of ZnO nanostructure gas sensors to ethanol vapor, a gas sensor testing system was designed and built with a sealed reaction chamber, ethanol vapor generator, testing circuit, and controlled heating system. The sensing responses of ZnO nanostructure samples were tested under various volumes of ethanol vapor at different temperatures to analyze their sensing responses.

Bio:

Pengtao Lin is a Ph.D student in Dr. Baumgart's group of Electrical and Computer Engineering department in Old Dominion University. He received his Master degree on Electrical Engineering in Gannon University in 2013 and Bachelor degree in China. Now, he is working on his research on ZnO nanostructure gas sensor in Dr. Baumgart's lab which is located in Applied Research Center in Newport News. The majority research works of this lab are based on Atomic Layer Deposition.