

ZnO nanowire based chemical field effect transistors

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Zinc oxide (ZnO) nanowires have attracted considerable research attention on account of their superior properties, such as large piezoelectric constant, wide band gap energy (3.37 eV), large exciton binding energy (60 meV), and high thermal and mechanical stability. Although ZnO nanowires are one of the promising candidates for various applications, few studies have reported the biosensing applications. In this work, we investigated the use of plasma polymerization for the immobilization of biomolecules on ZnO nanowires. The biomolecule functionalized ZnO nanowires were investigated using fluorescence microscopy and chemical field effect transistor. In addition, we detected the extremely small quantities of anaplasma phagocytophilum (etiologial agent of human granulocytic ehrlichiosis) using functionalized ZnO nanowire.