HIGH PERORMANCE SERS SUBSTRATE BASED ON NANO SILVER AND GOLD PARTICLES DECORATED ON 3D SEMICONDUCTOR NANO STRUCTURES (ZnO NANORODS AND PYRAMID Si) FOR DETECTING RESIDUAL PESTICIDE

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Abstract: In this study, we developed SERS substrate based on nano Ag and Au - decorated on 3D semiconductor structures, including ZnO nanorod (NRs) array and pyramid-Si substrates. The effective transfer of electron between 3D semiconductor substrates and molecular, the enhancement of plasmon surface from the density with "hot spot" and size of Ag/Au nano particles were investigated. The SERS substrates gave an analytical enhancement factor (EF) more than 10^6 — 10^7 and could detect Rhodamine 6G (R6G) at concentrations less than 10^{-11} M, and Abamectin at very low concentration 0,01 ppm.

Keywords: SERS, The enhancement factor EF, ZnO NRs, Si-pyramid, Rhodamine 6G, Abamectin