

Abstract Submitted
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Interfacial Barrier Height by Internal Photoemission for Metal/Oxide/Semiconductor Structure¹ KUNAL BHATNAGAR, Angelo State University Department of PHysics, NHAN NGUYEN, National Institute of Standards and Technology — Internal Photoemission (IPE) is a powerful technique for investigating electronic properties at solid-solid interfaces and determining band offsets and alignments in MOS (Metal Oxide Semiconductor) structures. In the following research, new metal gate electrodes for MOS structures are investigated - a combinatorial Ni-Ti-Pt ternary thin film library on SiO₂ and Si substrate. The zero-field barrier height is determined at the metal and oxide interface for Ni, Pt, Ti, and a compositional mixture of all the three metals using IPE characteristics. The barrier heights are then used to calculate the work function of the different metals to compare to the value obtained using C-V measurements. Interface barrier height at the metal-insulator interface is an important value, as it helps us better understand the structure and functioning of advanced CMOS devices which are a major component of today's computer chips and integrated circuits.

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