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Internal Photoemission Spectroscopy for A PtSi/p-Si Schottky Junction

B. ASLAN and R. TURAN

Physics Department, Middle East Technical University,

06531 Ankara-TURKEY

e-mail: aslan@metu.edu.tr

 [Keywords](#)
 [Authors](#)



phys@tubitak.gov.tr

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Abstract: Properties of internal photoemission in a PtSi-Si Schottky junction have been studied. The traditional Fowler plot of a detector's photoyield is found to be nonlinear for values close to the barrier height of the junction. It is shown that the model that takes all scattering mechanisms into account provides a successful description for the experimental results. It is also shown that the photoemission spectrum is independent of temperature in agreement with this model. The properties of detector's ambient influence the photoemission spectrum for wavelength of 3 μm or less. A strong loss in the detector's response is observed at around 3 μm . This drop is found to result from the ice formation on the detector's surface during the cooling process and it can be avoided by using a more effective pumping system.

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