

Influence of the Schottky barrier on conductance of metal-semiconductor nanocontacts

M. Wawrzyniak,¹ D. Tomaszewski,² P. Busz,² and J. Martinek²

¹*Faculty of Electronics and Telecommunications,
Poznan University of Technology, 60-965 Poznan, Poland*

²*Institute of Molecular Physics, Polish Academy of Science, 60-179 Poznan, Poland*

The break-junction technique is widely used to create atomic-scale nanocontacts. We use this technique to create nanocontacts at the metal-semiconductor interface and demonstrate that step-like conductance traces resulting from quantum conductance effects are possible to observe in the presence of the Schottky barrier. In our investigations the temporary histogram is applied to detection the barrier. We have developed the experimental setup that allows to measure the I - V characteristic for the last stable configuration of atoms in the nanocontact just before breaking. The I - V characteristics have been determined for several metals. This characteristics have nonlinear character, which demonstrate the influence of the Schottky barrier on the nanocontacts conductance.

References:

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