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Metal-silicon contact formation and role of the nanophase wetting layer

The result of the initial stages of the formation of a transition metal-silicon contact at room temperature has been analyzed. The contact was formed by physical vapor deposition. At the growth stage preceding the formation of the first bulk phase of the metal/silicide, a Nanophase Wetting Layer (NWL) of a metal/silicide on a silicon substrate was detected and identified. The detection and identification of NWL was made possible by the technique developed by the author for complex analysis of the structural-chemical and phase state of the surface/interface by Auger Electron Spectroscopy (AES) and Electron Energy Loss Spectroscopy (EELS). In addition, this became possible to the development of the low-temperature method of Physical Vapor Deposition (PVD) and the formation of metal-silicon contact by this method without mixing at the interface. The detection of NWL fundamentally changed the approach to the formation of a metal contact with a silicon substrate.

Biography

Nikolay Plusnin is currently the Chief Researcher in the Institute of Automation and Control Processes of FEB of the RAS, Vladivostok, Russia. He has completed his degree in Doctor of Physical-Mathematical Sciences. His research interests are in nanomaterials for electronics and their structure-phase analysis. He was a Visiting Professor in Tohoku University, Sendai, Japan. Also, he is a Member of the Advisory Board of the international journal *e-journal of Surface Science and Nanotechnology*. He has published more than 60 scientific articles. His research was supported by Russian Ministry of Education and Science, Academy of Sciences and Government.

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