



KONWERSATORIUM INSTYTUTU FIZYKI UMCS

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„Low-dimensional Sb nanostructures”

Behavior of topological states in three- and two-dimensional topological insulators is nowadays widely studied and well documented. Unique properties of the topological insulators, related to lack of energy dissipation in electron transport, demonstrate clearly that this material carries a great potential of application in nanoelectronics. Much less is known about topological states in quasi-one-dimensional and one-dimensional nanostructures. Although theory already delivers some model descriptions, a lack of experimental data, mainly because of technological difficulties in fabrication of nanostructures, is evident.

In this talk I will present results of studies on Sb atomic chains and nanoribbons fabricated by deposition of Sb atoms in UHV condition on several Si substrates with surface reconstruction in form of parallelly aligned atomic chains of Si, Au and Pb. Scanning tunneling microscopy and spectroscopy (STM/STS), reflection high energy electron diffraction (RHEED) and angle-resolved photoemission spectroscopy (ARPES) techniques were employed to characterize structure and electronic properties of Sb nanostructures.

Most interesting result of the current study is discovery of a new atomic chains selfassembly mechanism mediated via interchange of Sb atoms with the Pb atoms in chains on vicinal Si(553) surface.

Uprzejmie zapraszam wszystkich pracowników, doktorantów i studentów Instytutu Fizyki.

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