
Preface

These proceedings of the NATO-ARW “Physical properties of nanosystems” held at the “Yalta” Hotel, Yalta, Ukraine from 28 September–2 October 2009 emerged as a result of many presentations and discussions between workshop participants.

Yalta workshop focused on several open problems in the theory of correlated electron systems, nanophysics and sensor technology. The programme of the workshop allowed presentations and opened discussions on several emerging modern research topics, such as iron pnictides. Theoretical advances were tested against major experimental and technological achievements in related materials. In the session on novel superconductors, the physical properties of *Fe*-based and *MgB₂* and cuprate superconductors were discussed. Recent advances in nanoscience have demonstrated that fundamentally new physical phenomena are found when systems are reduced in size down to dimensions, comparable to the fundamental microscopic length scales of the investigated material. Latest developments in nanotechnology and measurement techniques facilitate experimental investigation of the transport properties of nanosystems. Special focus sessions were devoted to contemporary topics in nanophysics, such as carbon nanotubes, graphene, magnetic nanostructures, quantum dot, spintronics, molecular electronics, and quantum information processing.

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