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National Laboratory of Solid State Microstructures

The National Laboratory of Solid State Microstructures (NLSSM) was established in 1984, among the first group of state key laboratories established in China. The Laboratory is affiliated with Nanjing University. As a fundamental research laboratory, the missions of NLSSM are to design and fabricate new artificial microstructured materials via designing and tailoring the energy band structures in reciprocal space, to find out new macroscopic and microscopic quantum effects and principles, to develop new theories and methodology based on quantum physics, and to endeavor to meet the scientific challenges and technological requirements encountered in the post-Moore era and the post-petroleum era.

As one of the major research centers in condensed matter physics in China, research projects currently being carried out in NLSSM cover many important branches in artificial microstructure physics, quantum physics and the associated electronics, nanostructure properties and devices, soft condensed matter physics and computational physics. Currently, 27 principal investigators are leading their groups working mainly in the Cyrus Tang Building with a total laboratory space of over 20 000 m^2. The major state-of-the-art equipments in the Laboratory include transmission electron microscope (FEI Titan3 G2 60-300); spin-resolved ultrahigh vacuum scanning tunneling microscopy (Omicron); field-emission scanning electronic microscope (LEO 1530VP); three ion beams for total flexibility in sub10-nm fabrication (ZEISS ORION NanoFab); and physical property measurement system (PPMS-Dynacool). In addition, there are numerous thin film/bulk material fabrication facilities, as well as structural and spectrum characterization facilities. An advanced nanofabrication center equipped with electron beam lithography system (Raith e-Line) and focusing on ion-beam fabrication facility (Philips FB201) has been established, which will serve the needs for fabrications of nano/micro sized structures.

In the period of 2005–2009, the Laboratory has published 1858 peer-reviewed research papers, among which 39 were published in *Physical Review Letters*, 209 in *Physical Review* series, and 178 in *Applied Physics Letters*. During this period, the authorized patents numbered to 90, and in addition, there were 86 new applications.

NLSSM is also a public platform for international exchanges and cooperation. The Laboratory has accommodated many internship students, postdoctoral research associates and visitors, from domestic and abroad. It has collaborations with research institutes and universities in US, Japan, France, Germany, Italy, etc. Many joint research papers have been published in *Science, Nature Photonics, Advanced Materials*, and *Physical Review Letters*. The Laboratory sincerely welcomes international cooperation in areas of material design, quantum physics, nanooptics and plasmonics, clean energy and environment-related studies.

For more details, please see:
http://vlssm.nju.edu.cn