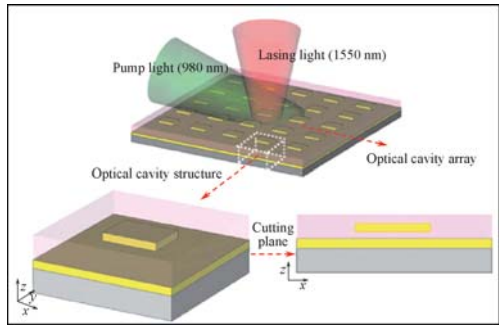
National Laboratory of Solid State Microstructures

The National Laboratory of Solid State Microstructures (NLSSM) of Nanjing University 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, find out new macroscopic and microscopic quantum effects and principles, develop new theories and methodology based on quantum physics, and endeavor to meet the scientific challenges and technological requirements emerging 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 field-emission transmission electron microscope (Philips F20); spin-resolved ultrahigh vacuum scanning tunneling microscopy (Omicron); field-emission scanning electronic microscope (LEO 1530VP); solid state nuclear magnetic resonance system (Bruker Arance 300); and superconducting quantum interference device (SQUID) (MPMSXL-7). 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 ion-beam fabrication facility (Philips FB201), has been established to 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 there are 39 in *Physical Review Letters*, 209 in *Physical Review* series, and 178 in *Applied Physics Letters*. During this period the number of authorized patents reaches 90, and there are additional 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 kept cooperations with research institutes and universities from US, Japan, France, Germany, Italy, etc.. Many joint research papers have been published in *Science, Nature Photonics, Advanced Materials*, and *Physical Review Letters*, among others. 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/