



Prof. Lei Liu

Southeast University, CHINA

Title:

Ultra-precision Measurement for Some Tumor Markers

Abstract:

Sensors are equipment that can acquire physical, chemical or biological information parameters and convert them into output signals according to certain laws. It is widely used in aerospace, military engineering ocean exploration, medical diagnosis, environmental monitoring and many other fields related to national security, people's health, and social production. Nowadays, ultra-high precision, in-situ online, real-time feedback, no damage are some important features of the development of modern sensing measurement. At the same time, the latest development achievements in cutting-edge fields such as nanotechnology biomedicine, quantum theory and material engineering are also promoting new breakthroughs in measurement technology and equipment.

In view of the major demand in the field of biomedical testing equipment and the major challenge of breaking through the sensing limit, we have developed new methods and new equipment for cross-scale micro-nano manufacturing of controllable thin films based on ALD with the innovation of thin film manufacturing equipment as the breakthrough point. According to the innovation of manufacturing process, we have used the multifunctional ALD to realize the cross-scale manufacturing and performance regulation of various ultra-sensitive micro-nano thin film structures. Meanwhile, taking the innovation of measurement principle as a breakthrough, we have developed many new sensors and realized the ultra-sensitive sensing measurement of a variety of major disease markers (such as miRNA).

On this basis, we are currently working to expand our work into the field of quantum precision measurement. Combining the multiple functions of atomic force microscopy (AFM) and the quantum sensing properties of diamond NV color centers, ultra-sensitive detection of various disease markers will be achieved and further broader and

wider application will be realized in the future.

Biography:

Liu Lei is a professor of Southeast University. From 1998 to 2007, he completed his undergraduate and doctoral studies at University of Science and technology of China, then entered Southeast University and engaged in the studies on micro-nano manufacturing and ultra-sensitive measurement.