



## Preface to the special issue on laser processing and micro-nano technology

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In 2022, coinciding with the 20th anniversary of the School of Physics and Electronics at Central South University, we plan to publish the special issue “Laser processing and micro-nano technology” in the *Journal of Central South University*, which aims to commemorate the 20th anniversary of the school and comprehensively present the latest achievement in the fields of laser processing and micro-nano technology to domestic and foreign universities.

This special issue focuses on current development and applications of laser processing and micro/nano technologies with comprehensive investigation of theory and experiment, including 21 original research and 3 review articles on the following topics: laser-matter interactions, laser micro/nanofabrication, laser drilling, laser welding, and laser cutting etc., advanced micro/nano technology, high frequency components using micro/nano technologies, MEMS/NEMS, and biomedical devices with micro-fabrications.

School of Physics and Electronics, Central South University, was established in 2002 with the merger of Physics Discipline and partial Electronic

Science and Technology (electronics discipline) of Hunan Medical University, Changsha Railway College, and Central South University of Technology, China. The school is home to the Departments of Applied Physics, Electronic Information, Photoelectric Information, Institute of Super-microstructure and Ultrafast Process, University Physics Center and Comprehensive Office.

The school offers doctoral degree in the first-level discipline of physics and post-doctoral research mobile station in physics. The physics discipline ranks in the top 1% of global ESI with research spans in a variety of fields such as low dimensional physics and devices, micro/nanophotonics, quantum physics and quantum control, computational physics, and theoretical physics. The school offers master degree in the first-level discipline of electronic science and technology, as well as engineering doctoral degree and engineering master degree in electronic information. The electronics discipline is at the forefront of research and education on microelectronics and solid state electronics, circuits



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and systems, and electromagnetic field and microwave technology, as well as flexible electronics and printing electronics, nonlinear circuits and systems, and microwave theory and technology. In addition, the school jointly builds an interdisciplinary doctoral degree authorization of new energy and energy storage engineering with the school of metallurgy and environment, which is responsible for renewable and clean energy. In 2018, both physics and electronic science and technology became double first-class cultivation disciplines in Hunan province. In 2021, the doctoral degree authorization of physics and master degree authorization of electronic science and technology passed the international evaluation, and both evaluation results were excellent.

The school has three undergraduate majors: applied physics (Science), electronic information science and technology (Science), photoelectric information science and engineering (Engineering). In 2019, the electronic information science and technology became the first-class construction specialty in China. In 2020, the applied physics became the first-class construction specialty in China, and the optoelectronic information science and engineering became the first-class construction specialty in Hunan province.

The school has five national teaching platforms: National Engineering Physics Teaching Base, National Physics Experimental Teaching Demonstration Center, National Virtual Simulation Teaching Center, First batch of National Virtual Teaching and Research Office Construction Sites, and National Top Student Training 2.0 Base of Basic Disciplines. The School has three national top-quality courses (National Network Resources Sharing Course) of College Physics, Physics Experiment and Solid Physics, and National Bilingual Demonstration Course of College Physics, as well as three national first-rate courses of College Physics, Signals and Systems, and Virtual Simulation Experiment. The school has two key laboratories in Hunan Province, including Super Microstructure and Ultrafast Process, Nano Photonics and Devices, as well as two Hunan engineering technology research centers, including Data Sensing and Exchange Equipment, New Chip

Inductors and Advanced Manufacturing Equipment.

The school had developed long-term and stable cooperative relations with more than 30 well-known universities outside Chinese Mainland, including, Massachusetts Institute of Technology, University of Rochester, and so on. With a number of universities at home and abroad, the school established the exchanges, cooperation and personnel training program. There are more than 100 scholars visiting each other every year.

Over the past 20 years, the school carried forward the motto of “rationalizing things and practicing innovation”. Taking the road of strengthening school with talents, teaching, scientific research, combining science with engineering, and developing with characteristics, the School of Physics and Electronics of Central South University will be built into a first-class and internationally influential discipline and talent training base in China.

#### Guest editors:



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Research interest: Laser processing, THz metamaterials, plasmonics research and applications.



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