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## Introduction to the State Key Laboratory of Environmental Aquatic Chemistry

State Key Laboratory of Environmental Aquatic Chemistry (SKLEAC) is a member of the State Key Joint Laboratory of Environmental Simulation and Pollution Control, responsibly constructed by Chinese Academy of Sciences (CAS) with a loan from the World Bank and financial input from CAS. SKLEAC was founded based on several laboratories in the Research Center for Eco-Environmental Sciences (RCEES) in the field of water quality sciences and technologies. SKLEAC is a multi disciplinary basic research center including environmental aquatic chemistry as core, geography, biology, ecology, hydrology, as well as environmental engineering and technology.

The goal of SKLEAC is to promote the basic research on water quality transformation processes in natural environment and new water purification technologies and processes. Specific objectives include: develop modern sciences and high-effective technologies for dealing with water quality problems in natural waters and water treatment processes; to establish applicable environmental water quality simulation system and computer software package; to develop industrialized water and high-effective waste-water treatment technology as well as the unit facilities; to evaluate the safety of water and water environment ecology; to optimize the scientific strategy for water quality management.

SKLEAC has a strong research group, including one academican of CAS, 10 research professors, more than 20 research fellows, and about one hundred doctoral and master students. In order to support more research work, SKLEAC established an advanced chemical instrumental analysis platform, which includes more than 40 analytical instruments such as AFM, HPLC-MS, GC-MS, TOC, etc. And five professional technicians are employed to maintain and manage these instruments.

### Research topics

1. Water quality identification: qualitative, quantitative and speciation analysis of trace contaminants and particulate in different types of water.
2. Water quality processes: physical, chemical, interfacial, geobiochemical processes of water.
3. Aquatic eco-toxicology: structure and function of aquatic ecosystems and ecotone, ecological and toxicological effects of contaminants, as well as their criterion and pollution control.
4. Water quality simulation: models for distribution and transfer of pollutants, models for environmental behaviors of pollutants, models for water treatment systems.
5. Water purification technology: reactors, facilities, unit operation and industrial processes for water and wastewater treatment, specifically on flocculation, adsorption, chemical and biological oxidation techniques.
6. Water quality management: water quality assessment, criterion, controlling strategy, optimal utilization scheme, as well as restoration, rehabilitation or reclamation technologies.

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