

# LECTURE

## prof. Svetlana Rogacheva

Saratov Medical University "REAVIZ",  
Yuri Gagarin State Technical University of Saratov, Russia

VISITING  
PROFESSOR  
PROGRAMME

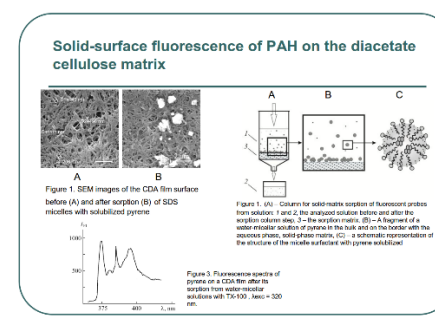
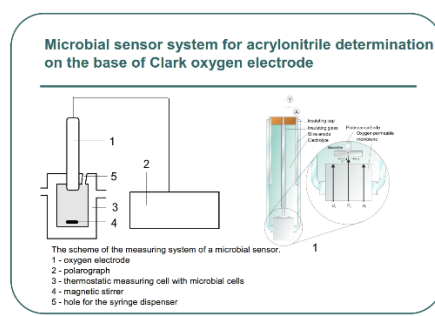
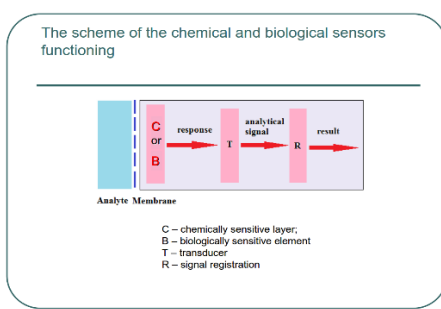
will deliver a lecture titled:

## Biosensors and chemical sensors of toxic compounds

DATE: Monday, 14 October 2019 | 13:00

VENUE: CNBCh UW, Aula B

### Annotation:



One of the urgent tasks of chemical analysis is the fast, not requiring complex sample preparation, selective determination of low concentrations of toxic substances in natural environments, food, raw materials, biological fluids. The solution of such a complex problem is possible with the help of chemo- and biosensors. These are devices that selectively react to a defined substance due to a chemical reaction or physical process taking place on a sensitive (recognition) element of a chemical or biological nature, and convert the result of the reaction into an easily recorded signal using a transducer.

Modern sensors are a product of the integration of achievements in various fields of knowledge - chemistry, biology, physics, mathematics and microelectronics. The lecture summarizes information on sensitive elements and transducers used in chemo- and biosensors, analytical characteristics and application of sensor systems.

Particular attention is paid to electrochemical and optical sensors. The principles of their construction, chemical and biochemical reactions underlying the action of their sensitive elements are considered. Examples of using sensors of these classes for the determination of toxic compounds are given. The results of our own research of sensitive elements of the amperometric biosensor of acrylic acid derivatives and the fluorescent chemosensor of polycyclic aromatic hydrocarbons are discussed. The results of the study of Saratov scientists on the development of potentiometric, immunochemical sensors and "electronic nose" are presented.



### University:

Research associate of Saratov Branch of All-Russian Institute of Genetics & Selection of Industrial Microorganisms (1988-1998); Associate Professor in Saratov Military Institute of Biological and Chemical Safety (1998-2009); Head of the Chair "Nature & Technosphere Safety" in Yuri Gagarin State Technical University of Saratov (2009 –2018). Present workplace: Head of the Chair of Natural Sciences of Saratov Medical University "REAVIZ", Professor of the Chair "Nature & Technosphere Safety" of Yuri Gagarin State Technical University of Saratov, Russia.

### Areas of professional interest

are related to biochemistry, biophysics, ecological biotechnologies, as

- Microbial enzymes, catalyzing the process of nitrile transformation into amide and acid; microbial biosensor systems for acrylamide and acrylonitrile determination in water (1988-2001).
- Nonspecific effect of physiologically active and toxic compounds in combination with electromagnetic radiation of low intensity on biological systems and their models (2001-2015).
- Solid-surface fluorescence of polycyclic aromatic hydrocarbons and heteroaromatic compounds for using in chemical sensors (2013-present).