



Assoc. Prof. Dr. Eng. Maya Ignatova is a Deputy Director of Institute of System Engineering and Robotics by Bulgarian Academy of Sciences (BAS). She received her MSc in Electrical Engineering- Industrial Automation from Technical University of Sofia, Bulgaria (1979) and a PhD on Applied Sciences - Control Systems from the same University (1979). Dr Ignatova habilitated as an Assoc. Prof. in Biotechnological Process Control Systems from the Central Laboratory of Bioinstrumentation and Automation, BAS in 1991. She was a visiting professor working on methods and algorithms for modelling and control of bioprocesses at LAAS-CNRS, Toulouse, France (1993- EC-COPERNICUS program); Centre for Process Biotechnology, Technical University of Denmark, Lyngby (2000-2001 - National Research Council of Denmark); Biotechnol S.A, Oeiras, Portugal (2002-NATO program); Laboratory of Environmental Biotechnology, INRA (2004-NATO program). Dr. Ignatova has over 110 papers in refereed journals and Intern. Conf. and more then 60 citations in recent years. She was a coordinator of 14 bilateral research projects – contract between BAS and other European scientific units. Currently, she is the coordinator of a scientific project on Increasing the Efficiency of Ethanol Production for the Purposes of Bio-Fuels, funded by the National Science Fund of Bulgaria. Her research interests are in control of biotechnological processes in food industry, wastewater treatment and bio-fuels production from renewable sources. She is a member of IFAC Technical Committee on Biosystems and Bioprocesses.

Lecture title: Information Science Applications in Bioprocess Control

Applications of information science for bio-process control design will be considered. Characteristics of biotechnological processes as control objects; Microorganism cultivation modes; Conventional and linearizing control schemes and their application; General Dynamical Model approach and its application; three-step procedure for linearizing adaptive control design. Two processes of ethanol production will be demonstrated as case studies.



Assoc. Prof. Dr. Eng. Velislava Lyubenova received her MSc in Electronics Engineering from the Technical University (TU) of Sofia, Bulgaria (1987) and a PhD in Bioengineering in the same University (1993). She habilitated as an Associate Professor in Automatic Control Theory in 2000 at the Institute of Control and System Research (ICSR), Bulgarian Academy of Sciences (BAS). Dr. Lyubenova has published over 60 papers in international scientific journals and peer-reviewed international conferences. She has over 110 citations, most of them in journals with IF. Her research activities are in the field of modelling, monitoring and control of bioprocesses. She is a supervisor of research projects between BAS and Institute of Information Theory and Automation, Czech Academy of Science and Helsinki University of Technology, Department of Chemical Technology, Finnish Academy of Sciences. She has a long standing cooperation on monitoring and control of bioprocesses with scientists from LADSEB-CNR Padova, Italy; University of Minho, Braga, Portugal; LAAS – CNRS Toulouse, France; University of Vigo, Spain; Technical University of Berlin and Technical University of Aachen, Germany.

Lecture title: **Information Science Applications in Bioprocess Monitoring**

A short description of the concept 'software sensor', main types and their application will be considered. Extensions of the General Dynamical Model Approach - new approaches for bioprocess kinetics monitoring. Bioprocess case studies of software sensors for process kinetics.