

"Nonlinear Raman Micro-spectroscopy: Applications to Biomedical Imaging and Sensing "

Dr. Vladislav V. Yakovlev
Department of Biomedical Engineering
Texas A&M University
Friday, December 6th, 2013
LECTURE: 9:00 AM - 10:00 AM

ENGINEERING CENTER
EC 1112
10555 WEST FLAGLER STREET
MIAMI, FL 33174



Abstract:

Nonlinear Raman spectroscopy based on coherent anti-Stokes Raman scattering (CARS) is seeing its renaissance these days and sparking a number of new applications in biomedical imaging and sensing. In my presentation I will describe the major physical principles that underlie this increasingly popular nonlinear optical microspectroscopy, outline the major technical innovations that allow this advanced spectroscopic tool to be incorporated in almost any laboratory utilizing short pulsed lasers and discuss its limitations from the standpoint of the signal-to-noise analysis. A careful analysis of those limitations allows designing the most ideal conditions for imaging and bioanalytical spectroscopy. At the end of my lecture I will describe a recently demonstrated intriguing possibility of combining nonlinear Raman excitation with ultrasound detection, which allows reaching a large penetration depth, while preserving chemical specificity and high spatial resolution.

Biography

Dr. Vladislav V. Yakovlev is a professor in the Department of Biomedical Engineering, Texas A&M University. He received his PhD in Physics/Quantum Electronics from Moscow State University in 1990 and postdoctoral training at University of California, San Diego from 1992 to 1996. He was appointed as assistant professor, associate professor, and professor in the Department of Physics, University of Wisconsin – Milwaukee from 1998 to 2011. He moved to Texas A&M University in 2012 as a professor in the Department of Biomedical Engineering.

Dr. Yakovlev has received multiple awards and honors including NSF CAREER Award (2000), Research Corporation Innovation Award (2000), ASEE Air Force Fellowship (2007 and 2008), and DOD Consortium Fellowship (2010-2012). He is a fellow of the Optical Society of America.

Dr. Yakovlev's research interest is Biomedical instrumentation related to sensing and imaging. He has published more than 180 peer-reviewed papers with a total citation > 3000.

Contact: bmeinfo@fiu.edu; 305-348-6717

Map: [http://campusmaps.fiu.edu/Engineering Center](http://campusmaps.fiu.edu/Engineering%20Center)