

UC SAN DIEGO NANOENGINEERING SEMINAR

Wednesday, March 28, 2018

Seminar Presentation: 11:00am - 12:00pm

ASML Conference Center (SME 248)

“The Smaller the Better: Isn’t that Obvious?”

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Abstract: Manipulation of matter on an atomic and molecular level to produce the desired nanometer scale structures has an enormous potential in the field of medicine including diagnostics, drug delivery, therapy, and treatment monitoring. This presentation, via examples, will offer a few insights into how nanotechnology and imaging devices can change both fundamental medical science and the clinical management of diseases. Specifically, high-resolution, high-sensitivity, depth-resolved imaging technique based on a synergistic combination of what seems to be drastically different energy sources: light and sound, will be introduced. Augmented with targeted imaging contrast nanoagents, this technique is capable of simultaneous visualization of structural, functional and molecular/cellular properties of tissue. Several approaches and in vivo applications of this multi-scale non-ionizing light-and-sound hybrid imaging—ranging from cancer detection and diagnosis to cell tracking to image-guided molecular and mechano-thermal therapy—will be presented. The role of nanoconstructs in these applications will be highlighted, and the development of nanoconstructs with desired physicochemical properties will be discussed. Finally, current challenges and concerns associated with nanobiotechnology will be presented, and possible solutions will be discussed.

Biosketch: Dr. Stanislav Emelianov is a Joseph M. Pettit Endowed Chair, Georgia Research Alliance Eminent Scholar, and Professor of Electrical & Computer Engineering and Biomedical Engineering at the Georgia Institute of Technology. He is also appointed at Emory University School of Medicine where he is Professor of Radiology and member of Winship Cancer Institute. Furthermore, Dr. Emelianov is Director of the Ultrasound Imaging and Therapeutics Research Laboratory. Overall, projects in Dr. Emelianov's laboratory are focused on the discovery, development and clinical translation of diagnostic imaging and therapeutic instrumentation, augmented with theranostic nanoagents.