



IEEE Engineering in Medicine and Biology Society Dallas Chapter Seminar IEEE-EMBS Distinguished Lecture Series

Development of Cardiac Electrophysiology Devices

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Friday, September 14, 2012, 11:45 pm – 1pm

The development of a successful medical device requires not only engineering design efforts, but also clinical, regulatory, marketing and business expertise. Please join Dr. Panescu as he shares lessons on the steps required to take a medical product idea from concept, through development, verification and validation, and regulatory approvals, culminating with a successful market release. Dr. Panescu will also discuss progress in the development of cardiac ablation devices and cardiac devices that permit monitoring congestive heart failure by multi-vector intrathoracic impedance. (see extended abstract at next page for more details)

Location **ECSS 2.102 (TI Auditorium)**

University of Texas at Dallas,
800 W Campbell Rd, Richardson, TX

RSVP at

https://meetings.vtools.ieee.org/meeting_view/ist_meeting/13867

*Food will be served at 11:45am
Campus map in next pages*

Visitor parking permit will be available soon

Visit <http://sites.ieee.org/dallas-embs> for more info

Dr. Dorin Panescu is the Senior Director for New Product Development with Intuitive Surgical, Inc., the world leader in the development of medical robotic technology and minimally invasive surgery. He has held R&D leadership positions with companies such as Boston Scientific and St. Jude Medical, and most recently, served as Chief Technical Officer with NewCardio, Inc., a start-up involved with software and equipment for cardiac diagnosis and remote patient monitoring. Dr. Panescu has over 145 issued US patents mostly related to devices for cardiac diagnosis and therapy delivery and over 130 publications to his credit. Dr. Panescu earned his Ph.D. and M.S. in Electrical and Computer Engineering from the University of Wisconsin at Madison and has a Bachelors of Science in Electronics and Telecommunications from the Polytechnic Institute, Timisoara, Romania. Dr. Panescu has held various offices with the IEEE Engineering in Medicine and Biology Society (EMBS) and is an IEEE Fellow, 2012 EMBS Distinguished Lecturer, and a Fellow of American Institute for Medical and Biological Engineering (AIMBE). We are delighted to have him speak at this years distinguished lecture series.



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Dr. Panescu's talk will cover these topics

- Overview of cardiac ablation device development.

Engineering aspects related to the design of RF generators for cardiac ablation will be discussed: the clinical and technical background of RF cardiac ablation; Power control vs. temperature control of RF generators output stage; Patient interface and protection or isolation barriers; Cable effects compensation; Energy shutdown limits related to power, temperature, and impedance; Engineering standards required for regulatory compliance.

- Monitoring congestive heart failure by multi-vector intrathoracic impedance.

Monitoring of pulmonary edema secondary to congestive heart failure (CHF) based on trends in intrathoracic impedance (Z_c) measured between multiple implanted electrodes will be discussed. Electrodes on implanted pacemakers or defibrillator leads were used. Z_c was measured every hour along four intrathoracic and two intracardiac vectors. Left atrial (LA) pressure was measured daily by an implanted LA pressure sensor. The results show that all six impedance vectors decreased during CHF. Impedance measurement employing left-heart electrodes correlated very well with trends in LA pressure, and may improve detection of CHF onset.

- Lessons learned from medical product development.

The development of a successful medical product requires not only engineering design efforts, but also clinical, regulatory, marketing and business expertise. The steps required to take a medical product idea from concept phase, through development, verification and validation, regulatory approvals, culminating with its successful market release will be discussed.

