

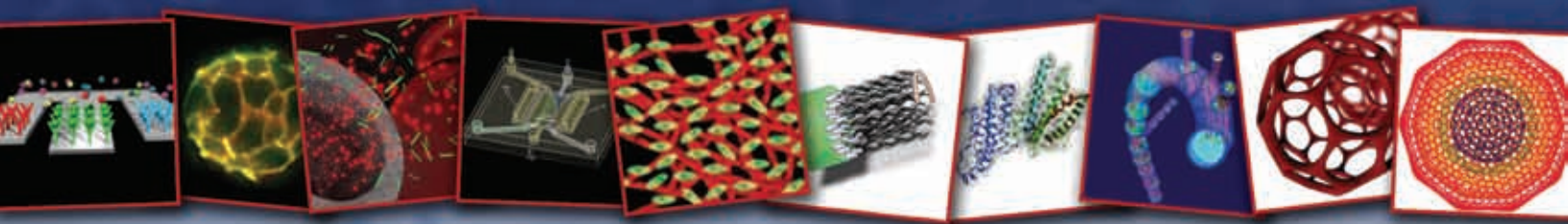


# NEMB 2010

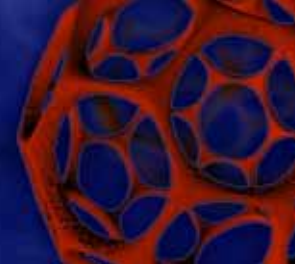
ASME 2010 First Global Congress on  
NanoEngineering for Medicine and Biology

## Tutorials Program

*Advancing HealthCare through NanoEngineering and Computing*



February 7, 2010 - Houston, TX



**Tutorials** presented by acclaimed specialists will precede the conference on **Sunday, February 7, 2010**.

Don't miss this opportunity for cutting edge training at a fraction of the cost and time investment.

**Space is limited. Take advantage of advanced registration now!**

## Tutorial Schedule

Time	Nanoengineering Tools for Biomedicine	Computational Methods for the Cardiovascular System	NanoEngineered Therapeutics I
8.00 – 8.50	J. DeSimone	Unit 1 and 2	Michael A. Teitell
8.50 – 9.40	J. West	Jay D. Humphrey and Charles Taylor	Eiji Osawa
Break I			
10.00 – 10.50	C. Li	Unit 3 and 4	Eiji Osawa con't
10.50 – 11.40	T. Thundat	Jay D. Humphrey and Charles Taylor	Dean Ho
Break II			
12.00 – 12.50	P. Decuzzi	Unit 5 and 6	Dean Ho con't ..
12.50 – 1.40	M. Ostojca-Starzewski	Jay D. Humphrey and Charles Taylor	
Break III			
	Challenges in Biomedicine for Engineers	Regulation and Commercialization of NanoEngineered Medical Devices and Materials	NanoEngineered Therapeutics II
2.00 – 2.50	D.D. McPherson	Regulation and Standardization Track	Wing K. Liu
2.50 – 3.40	G. Lopez-Berestein	Scott E. McNeil, Wendy R. Sanhai, Max Talbott	
Break IV			
4.00 – 4.50	R. Pasqualini	Commercialization Track	
4.50 – 5.40	A.K. Sood	Christopher Anzalone, Don Payne, Randy K. Goodall	

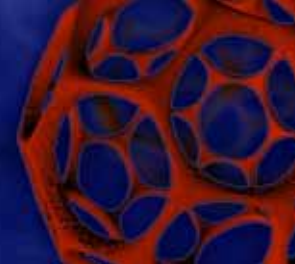
## Tutorial Fees

### With Full Conference Registration\*

	Advanced Tutorial Fees Before 1/25/2010	On-Site Tutorial Fees After 1/25/2010
ASME Member	\$120.00	\$150.00
Non Member	\$150.00	\$170.00
Student Member	\$50.00	\$75.00
Student Non Member	\$60.00	\$85.00
Life Member	\$50.00	\$75.00

\*Full Registration Fee: Includes admission to all technical sessions, exhibit, coffee breaks, Opening Reception, Evening Awards Banquet and 1 CD-Rom proceedings.

\*\* Note: Tutorial Fees are doubled *without* Full Conference Registration



## Nanoengineering Tools for Biomedicine

Sunday, February 07, 2010

08:00 AM-01:40 PM

### Course Outline

The lectures will focus on the fabrication, development, mathematical modeling and rational design of nano/micro-devices for biomedical applications ranging from drug delivery to biomedical imaging, physical therapy and early detection.

**Module 1** – *Top-down Fabrication Technologies for the Production of Highly Uniform, Shape-Specific Carriers for Vaccines, Biologics and Small Molecule Drugs*

Presented by **Joseph M. DeSimone, PhD**

Chancellor's Eminent Professor of Chemistry

William R. Kenan Jr. Distinguished Professor of Chemical Engineering

University of North Carolina at Chapel Hill

**Module 2** - *Diagnostic and Therapeutic Applications of Nanotechnology*

Presented by **Jennifer West, PhD**

Isabel C. Cameron Professor of Bioengineering;

Professor of Chemical and Biomolecular Engineering;

Chair of the Department of Bioengineering

Rice University

**Module 3** - *Nanotechnology Molecular Theranostics*

Presented by **Chun Li, PhD**

Professor, Department of Experimental Diagnostic Imaging

The University of Texas, M.D. Anderson Cancer Center

**Module 4** - *Nanomechanical Implantable Sensors for Diagnostics*

Presented by **Thomas Thundat, PhD**

Corporate Fellow and Leader, Nanoscale Science and Devices Group

Oak Ridge National Laboratory

**Module 5**- *Rational Design of nano-Particle Systems for Biomedical Imaging and Therapy*

Presented by **Paolo Decuzzi, PhD**

Associate Professor, University of Texas Health Science Center Houston

Director of the "Center for the Rational Design of Particulate Systems for the

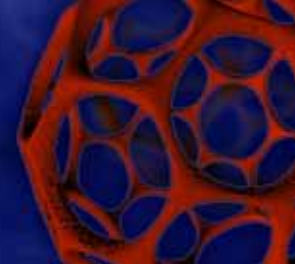
Imaging and Hyperthermia of an Inflamed Endothelium"

**Module 6**- *Homogenization and Scaling Methods of Heterogeneous Media*

Presented by **Martin Ostojic-Starzewski, PhD**

Professor of Mechanical Science and Engineering

University of Illinois at Urbana-Champaign.



## Challenges in Biomedicine for Engineers

Sunday, February 07, 2010

02:00 PM-05:40 PM

### Course Outline

Clinical applications of nanotechnological tools in fields as oncology (breast, liver, ovarian/prostate cancer), cardiology, gynecology, trauma and orthopedics.

**Module 1** – *Taking the Correct Concept and Translating Engineering into Biology: Biomedical Engineering: Targeted Molecular Imaging and Drug and Gene Delivery*

Presented by **David D McPherson, MD**

Head Division of Cardiology, Medical School

The University of Texas Health Science Center at Houston

**Module 2** – *Characterization of lipid based nanoparticles for siRNA delivery to tumors*

Presented by **Gabriel Lopez-Berestein, MD**

Professor of Medicine and Cancer Biology, Department of Experimental Therapeutics

Executive Director of the Pharmaceutical Development Center University of Texas

M. D. Anderson Cancer Center (MDACC)

**Module 3** - *Ligand-directed therapy and molecular imaging based on in vivo phage display technology: translational updates in nanomedicine applications.*

Presented by **Renata Pasqualini, PhD**

Buchanan & Seeger Professor, Medicine and Cancer Biology

The University of Texas M. D. Anderson Cancer Center

**Module 4** - *Interfering with Tumor Vasculature*

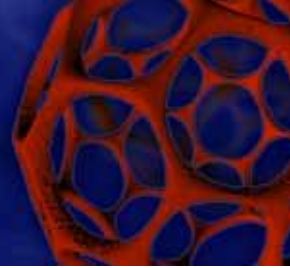
Presented by **Anil K. Sood, MD**

Professor and Director,

Blanton-Davis Ovarian Cancer Research Program

Departments of Gynecologic Oncology and Cancer Biology

The University of Texas M.D. Anderson Cancer Center

**Computational Methods for the Cardiovascular System**

Sunday, February 07, 2010

**08:00 AM-01:40 PM****Course Outline**

Application of computational mechanics to the study of blood flow, vessel dynamics, and growth and remodeling in cardiovascular health and disease.

Unit 1. Overview of Cardiovascular Anatomy, Physiology & Pathophysiology

Unit 2. Cellular and Tissue Responses to Mechanical Loads

Unit 3. Relevant Constitutive Relations and Boundary Conditions

Unit 4. Patient-Specific Modeling

Unit 5. Approaches to Modeling Biological Growth and Remodeling

Unit 6. Illustrative Examples and Open Problems

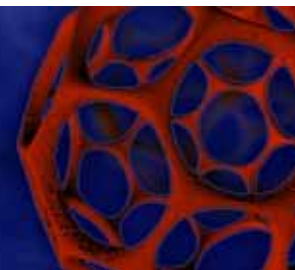
**Lecturers:****Jay D. Humphrey, PhD**

Professor,  
Department of Biomedical Engineering  
Texas A&M Biomedical Engineering

and

**Charles Taylor, PhD**

Founder and Chief Scientist  
Cardiovascular Simulation, Inc



## **NanoEngineered Therapeutics I & II**

Sunday, February 07, 2010

08:00 AM-01:40 PM and 02:00 PM-05:40 PM

### **Course Outline**

Nanoengineered materials represent a class of technologies that can be applied towards the treatment of a broad spectrum of medical challenges, ranging from cancer, cardiovascular disease, regenerative medicine, and beyond. Requisites for optimized therapy include the design of materials that serve as platforms in that they are capable of delivering multiple forms of therapeutics, from proteins to antibodies and small molecules, etc; possess high surface area-to-volume ratios for enhanced drug loading; are capable of consistent clearance; improve opportunities for targeted/specific drug release, and are amenable towards scalable synthesis and fabrication techniques, among others. By pairing these technological attributes with emerging findings towards enhanced combinatorial/sequential drug release methodologies, nanoengineered material-mediated therapy will generate important new routes towards improving patient treatment outcomes while minimizing side effects.

#### **Module 1 - *Cancer: Defining Disease and the Need for Nanoengineered Materials***

Presented by **Michael A. Teitell MD, PhD**

Departments of Pathology and Pediatrics

Chief, Division of Pediatric and Neonatal Pathology

Co-Director, Cancer Cell Biology Program Area, Jonsson Cancer Center

#### **Module 2 - *Recent Progress in the R&D of Single-Nano Diamond Particles***

Presented by **Eiji Osawa, PhD**

President, NanoCarbon Research Institute, Limited

Shinshu University, Ueda, Japan

#### **Module 3 - *Nanodiamond-Based Therapeutic Delivery Agents For Enhanced Cancer Treatment***

Presented by **Dean Ho, PhD**

Assistant Professor, Departments of Biomedical Engineering and Mechanical Engineering, Robert R. McCormick School of Engineering and Applied Science

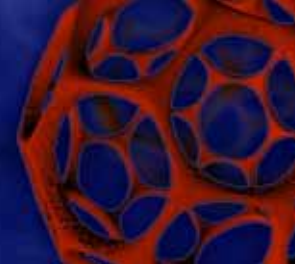
Director, Laboratory for Nanoscale Biotic-Abiotic Systems Engineering (N-BASE), Robert H. Lurie Comprehensive Cancer Center, Northwestern University

#### **Module 4 - *Science-Based Modeling and Simulation Methods for General Classes of Enabling Materials***

Presented by **Wing Kam Liu, PhD**

Walter P. Murphy Professor, Department of Mechanical Engineering

Northwestern University



**Regulation and Commercialization of NanoEngineered Medical**

**Devices and Materials**

Sunday, February 07, 2010

02:00 PM-05:00 PM

Sponsored by:



**Course Outline**

Early and midstage industrial developments of nanotechnological tools for biomedical applications and regulatory procedures for the bench to-bedside translation.

Session Introductions: **Walter Ulrich, CEO**. Houston Technology Center

**REGULATION & STANDARDIZATION TRACT**

**Moderator - Deborah Mansfield, MS, MBA** - HTC Director, Life Sciences Program

**Scott E. McNeil, PhD, Director**

Director, Nanotechnology Characterization Laboratory  
National Cancer Institute at Frederick

**Wendy R. Sanhai, PhD**

Senior Scientific Advisor

Office of the Commissioner, FDA

Topic: *Nano-Engineered Medical Product Development: An FDA Perspective*

**Max Talbott, Director MAX TALBOTT LLC**

Topic: *Industry and Government in the Regulation of Nanotechnology Healthcare Products: The Views of Someone Who Has Seen Both Sides*

**COMMERCIALIZATION TRACT**

**Moderator - Bill Crow** -- HTC Entrepreneur in Residence for NanoEnergy & NanoHealth

**Christopher Anzalone, PhD**

President and CEO

Arrowhead Research Corporation

**Don Payne**

President & CEO

BioSpectra Bioscience

**Randy K. Goodall, PhD**

Co-Founder & CEO

NanoMedical Systems Inc.