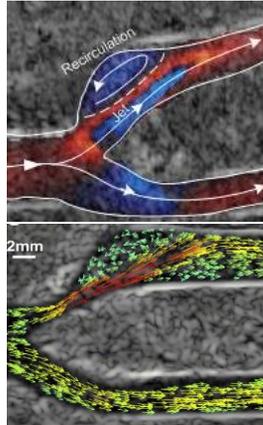
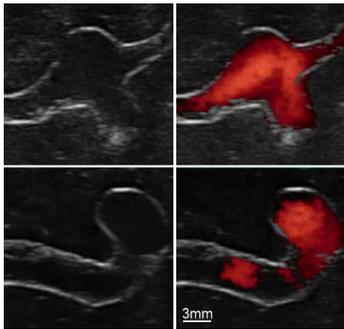
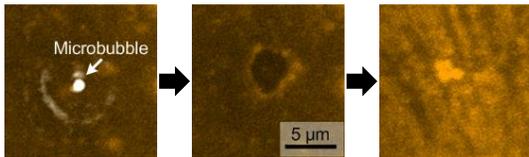
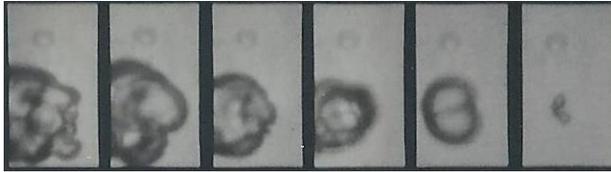




The University of Hong Kong Medical Engineering Programme

MedE Spring School

Frontier Advances in Biomedical Ultrasound April 29-30, 2015



Session 1 Wednesday
April 29, 1:30pm-5:30pm

The New World of Therapeutic
Ultrasound

Chow Yei Ching Building, Theatre C

Session 2 Thursday
April 30, 9:00am-12:30pm

Novel Diagnostic Ultrasound
Techniques

Chow Yei Ching Building, Theatre A

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Ultrasound is known for its broad applicability in biomedicine. Through a series of educational seminars from ultrasound researchers, we will introduce participants to the latest concepts and methods in ultrasound therapy and diagnostics.

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Organizers

Dr. Alfred Yu (alfred.yu@hku.hk)
Dr. Wei-Ning Lee (wnlee@eee.hku.hk)





The University of Hong Kong Medical Engineering Programme

Spring School: Frontier Advances in Biomedical Ultrasound April 29-30, 2015

Organizers: Dr. Alfred C. H. Yu & Dr. Wei-Ning Lee

Session 1: April 29 (1:30pm to 5:30pm)
The New World of Therapeutic Ultrasound
Host: Dr. Wei-Ning Lee

13:30-13:50	Educational Overview on Therapeutic Ultrasound <i>Dr. Alfred C. H. Yu</i>
13:50-14:30	Microbubbles and Sonoporation <i>Prof. Nobuki Kudo</i> <i>Graduate School of Information Science and Technology</i> <i>Hokkaido University, Japan</i>
14:30-15:10	Focused Ultrasound Therapy <i>Prof. Eun-Joo Park</i> <i>Biomedical Research Institute & Department of Radiology</i> <i>Seoul National University Hospital, Korea</i>
15:10-15:40	Acoustic Cavitation Modeling <i>Prof. Chien Ting Chin</i> <i>Department of Biomedical Engineering</i> <i>Shenzhen University, China</i>
15:40-16:00	TEA BREAK
16:00-16:30	Optical Characterization of Therapeutic Ultrasound Fields <i>Prof. Nobuki Kudo</i> <i>Graduate School of Information Science and Technology</i> <i>Hokkaido University, Japan</i>
16:30-16:50	Histotripsy <i>Dr. Wei-Ning Lee</i> <i>Medical Engineering Programme</i> <i>University of Hong Kong</i>
16:50-17:10	Cellular Dynamics of Low-Intensity Ultrasound <i>Dr. Alfred C. H. Yu</i> <i>Medical Engineering Programme</i> <i>University of Hong Kong</i>
17:10-17:30	Ultrasonic Cellular Modulation Using Microbeams <i>Dr. Koko Lam</i> <i>Department of Electrical Engineering</i> <i>Hong Kong Polytechnic University</i>

Session 2: April 30 (9:00am to 12:30pm)
Novel Diagnostic Ultrasound Techniques
Host: Dr. Alfred C. H. Yu

9:00-9:20	Educational Overview on Diagnostic Ultrasound <i>Dr. Wei-Ning Lee</i>
9:20-10:00	High-Frequency Acoustic Tissue Characterization <i>Prof. Yoshifumi Saijo</i> <i>Graduate School of Biomedical Engineering</i> <i>Tohoku University, Japan</i>
10:00-10:20	High-Frequency Ultrasound Elasticity Imaging <i>Prof. Chih-Chung Huang</i> <i>Department of Biomedical Engineering</i> <i>National Cheng Kung University, Taiwan</i>
10:20-10:40	Ultrasound Elasticity Measurements and Imaging <i>Prof. Yongping Zheng</i> <i>Interdisciplinary Division of Biomedical Engineering</i> <i>Hong Kong Polytechnic University</i>
10:40-11:00	TEA BREAK
11:00-11:20	Shear Wave Imaging of Cardiac Mechanics <i>Dr. Wei-Ning Lee</i> <i>Medical Engineering Programme</i> <i>University of Hong Kong</i>
11:20-11:40	Coded Excitation in Ultrasound Imaging <i>Prof. Che-Chou Shen</i> <i>Department of Electrical Engineering</i> <i>National Taiwan University of Science and Technology, Taiwan</i>
11:40-12:00	High Frame Rate Imaging of Complex Flow Dynamics <i>Dr. Alfred C. H. Yu</i> <i>Medical Engineering Programme</i> <i>University of Hong Kong</i>
12:00-12:30	Photoacoustic Imaging <i>Prof. Yufeng Zhou</i> <i>Department of Mechanical Engineering</i> <i>Nanyang Technological University, Singapore</i>

Funding Body Acknowledgements



HKU Medical
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Spring School Organizers



Alfred Yu has long-standing research interest in ultrasound imaging and therapeutics. He is a Research Assistant Professor in the EEE Department at HKU. His group is actively making various imaging innovations for complex flow visualization and investigating the mechanistic foundations of therapeutic ultrasound. Dr. Yu obtained his B.Sc. degree in Electrical Engineering from the University of Calgary, and he received his M.A.Sc. and Ph.D. degrees in Biomedical Engineering from the University of Toronto. He is a Senior Member of *IEEE*, and he is now an Associate Editor of *IEEE Transactions on Ultrasonics Ferroelec. & Freq. Control*. He is also an Editorial Board Member of *Ultrasound in Medicine and Biology*.



Wei-Ning Lee received her B.S. and M.S. degrees in electrical engineering from National Taiwan University, and her Ph.D. degree in biomedical engineering from Columbia University, New York, USA, in February 2010. She then worked as a postdoctoral fellow at Institut Langevin in ESPCI ParisTech, Paris, France from January 2010 to June 2012. She is currently an Assistant Professor in the EEE Department at HKU. She won a New Investigator Award at the AIUM Annual Convention in 2009 and an Early Career Award from the Hong Kong Research Grants Council in 2013. Her current research interests include ultrasound imaging techniques in cardiovascular applications as well as medical imaging and therapy.

Keynote Lecturers



Nobuki Kudo is an Associate Professor in the Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan. A native of the Hokkaido prefecture, Prof. Kudo received the BS degree in Electronics Engineering, and the MS and PhD degrees in Biomedical Engineering, all from Hokkaido University. After PhD graduation, he joined Toshiba to develop shockwave lithotripters and diagnostic ultrasound equipment. Seven years later, he returned to Hokkaido University to work as a faculty member in the Graduate School of Engineering. His research tackles two frontier topics in ultrasonics: 1) elucidating the mechanisms of sonoporation; 2) designing optical methods to visualize ultrasound fields.



Yoshifumi Saijo was received the M.D. and the Ph.D. degrees from Tohoku University, Sendai, Japan. He is currently Professor of the Biomedical Imaging Laboratory and Director of Medical Device Innovation Center at the Graduate School of Biomedical Engineering of Tohoku University. He is also an advisor of Physiological Examination Center at Tohoku University Hospital. His main research interests include high resolution imaging with high frequency ultrasound, blood flow analysis in cardiovascular system, and photoacoustic imaging. He was awarded in 1997 for his outstanding research paper in *Ultrasound in Medicine and Biology*. He is a member of The *Japan Society of Ultrasonics in Medicine*, *Japanese Society of Echocardiography*, *Japanese Society for Medical & Biological Engineering* and *Japan Circulation Society*.

Other Guest Lecturers



Eun-Joo Park is a Research Associate Professor at the Biomedical Research Institute and the Dept. of Radiology of Seoul National University Hospital. She received her B.S. and M.S. degrees in Physics from the Sungkyunkwan University in Korea, a second M.S. degree in Mechanical Engineering at Boston University, and a Ph.D. degree in Biomedical Engineering at Penn State University. After her PhD studies, she had a long research spell at the Focused Ultrasound (FUS) Laboratory at the Brigham & Women's Hospital of Harvard Medical School. Her research interests include targeted drug delivery using FUS and microbubbles, blood-brain barrier opening for brain diseases, cancer drug release from drug-loaded carriers, immune responses of cancer cells to FUS exposure, and related image guidance technologies.



Che-Chou Shen received the B.S., M.S. and Ph.D. degrees in Electrical Engineering from National Taiwan University, Taipei, Taiwan, respectively in 1998, 2000 and 2005. He is currently a Full Professor in the Department of Electrical Engineering at National Taiwan University of Science and Technology (NTUST). His research interests include ultrasonic imaging, nonlinear detection of ultrasound contrast agents with encoded waveform and Doppler flow estimation. He received the 2012 Excellent Research and Creation Awards and the 2012 Outstanding Teaching Award in NTUST.



Yufeng Zhou received his B.S. and M.S. degrees from the Institute of Acoustics, Nanjing University, and he obtained his PhD in Bioacoustics at Duke University. After working as a researcher for 7 years at Duke University, ImaRx Therapeutics, and University of Washington, he joined Nanyang Technological University in Singapore in 2010 as an Assistant Professor in the School of Mechanical and Aerospace Engineering. His research interests include: biomedical ultrasound in therapy and diagnosis, nondestructive evaluation and testing, and acoustics. Prof. Zhou is a Senior Member of *IEEE*, an Editorial Board Member of *Ultrasound in Medicine and Biology*, and the Secretary of *Singapore Acoustical Society*.

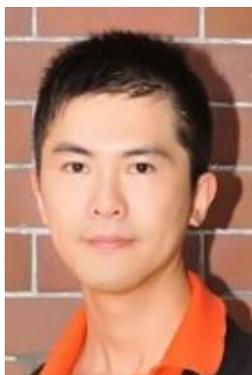


Chien Ting Chin earned a B.A.Sc. degree in Engineering Science, a M.Sc. degree in Physics, and a Ph.D. degree in Medical Biophysics, all from the University of Toronto. From 2001 to 2004, he was a research scientist at the Erasmus University, Holland. He then joined Philips Research in New York as a senior research staff. Since 2010, he has been a professor in the Department of Biomedical Engineering at Shenzhen University. Prof. Chin's research interest covers the physics and engineering aspect of biomedical ultrasound. He is interested in developing diagnostic and therapeutic devices, and he has investigated the use of microbubbles for both imaging and drug/gene delivery.

Other Guest Lecturers



Yongping Zheng received the BSc and MEng in Electronics and Information Engineering from the University of Science and Technology of China, and the PhD degree in Biomedical Engineering from the Hong Kong Polytechnic University (PolyU) in 1997. After a postdoctoral fellowship at the University of Windsor, he joined PolyU where he is now a Full Professor and the Head of the BME Interdisciplinary Division. He also served as the Associate Director of the Research Institute of Innovative Products in PolyU (2008-2010). Prof. Zheng's main research interests include tissue elasticity measurement and imaging, biomedical ultrasound imaging, and wearable sensors for healthcare. He is on the editorial board of *Ultrasound in Medicine and Biology*, *Physiological Measurement*, and *Journal of Orthopaedic Translation*. He is a Senior Member of *IEEE*, a Fellow of *HKIE*, and Secretary-Elect of *World Association of Chinese Biomedical Engineers*.



Koko Lam received the M.Phil. and Ph.D. degrees in Applied Physics from the Hong Kong Polytechnic University. He joined the EE Department at HKPolyU as an Assistant Professor in 2013. Previously he was a Visiting Scholar at Stanford University, Postdoctoral Researcher at HKPolyU, and Research Associate at the University of Southern California. With research interests in smart materials, Dr. Lam has in recent years been focusing on ultrasound transducer technology and its biomedical applications, and has received an Early Career Scheme Award from Hong Kong Research Grants Council for this work. He is a member of *IEEE* and *American Chemical Society*. He also serves on the ExCo of *IEEE Hong Kong Joint Chapter of PES/IAS/PELS/IES*.



Chih-Chung Huang received the B.S., M.S., and Ph.D. degrees in Biomedical Engineering from Chung Yuan Christian University, Taiwan, in 2002, 2003, and 2007. From 2006 to 2007, he worked at NIH Resource Center for Medical Ultrasonic Transducer Technology at the University of Southern California as a Visiting Researcher where he engaged in research of high frequency ultrasound imaging and development of new acoustic methods for cataract diagnosis. In 2008, he joined Fu Jen Catholic University, Taiwan as an Assistant Professor. In 2012, Dr. Huang was promoted as an Associate Professor. Currently, he is a faculty member at Department of Biomedical Engineering, National Cheng Kung University, Taiwan. His research interests include ultrasonic tissue characterization, blood flow measurement, high frequency ultrasound, and ultrasonic instrument for medical applications.