

**University of Rochester
Department of Electrical and Computer Engineering
Colloquia Series**

Ultrasound phased arrays for therapy delivery and monitoring

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**Wednesday, January 27th
12:00PM – 1:00PM
Computer Studies Building (CSB) 209**

Abstract: Ultrasound phased arrays for therapy delivery and monitoring. Focused ultrasound has been shown to be the only method that allows noninvasive thermal coagulation of tissues and recently this potential has been explored for noninvasive image-guided drug delivery. In this presentation, the advances in ultrasound phased array technology for well controlled energy delivery, exposure monitoring and control will be discussed. Experimental results from novel multi-frequency transmit/receive arrays will be presented. In addition, some of the recent preclinical results for the treatments of brain tumors, stroke, and Alzheimer's disease will be reviewed.

Bio: Dr. Hynynen received his Ph.D. from the University of Aberdeen, United Kingdom. After completing his postdoctoral training in biomedical ultrasound also at the University of Aberdeen, he accepted a faculty position at the University of Arizona in 1984. He joined the faculty at the Harvard Medical School, and Brigham and Women's Hospital in Boston, MA 1993. There he reached the rank of full Professor, and founded and directed the Focused Ultrasound Laboratory. In 2006 he moved to University of Toronto where he led a \$160 million effort to establish the Centre for Research in Image-Guided Therapeutics, a consortium between the Canadian government and Sunnybrook Hospital. He is currently the Director of Physical Sciences Platform at the Sunnybrook Research Institute and a Professor in the Department of Medical Biophysics and Cross Appointed Professor in Institute of Biomaterials & Biomedical Engineering (IBBME) at University of Toronto, Toronto. He holds a Canada Research Chair in Imaging Systems and Image-Guided Therapy awarded by the Government of Canada and leads the Centre for Research in Image-Guided Therapeutics. Dr. Hynynen has published over 340 peer reviewed papers on basic and clinical research and has been awarded 17 patents many of which have been licensed by industry. His research has been fundamental for the development of MRI-guided focused ultrasound, trans-skull ultrasound delivery and the use of ultrasound to open the Blood-Brain barrier for therapy delivery. His research has taken novel therapy devices from an idea to clinical testing and commercialization. He is a Fellow of the American Institute of Ultrasound in Medicine, the Acoustical Society of America, and was the Honorary President of the 2nd International Symposium on MRI-guided Focused Ultrasound by the Focused Ultrasound Foundation. He was named the J. Eugene Robinson Awardee by the Society of Thermal Medicine, the William and Francis Fry Honorary Fellow by the International Society for Therapeutic Ultrasound, was awarded the Silver Medal by the Acoustical Society of America and the IEEE Rayleigh Award (highest honor for achievement within the UFFC Society in the field of Ultrasonic).

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