

Conference Program

Saturday 11 July

Whole day	Check-in at the PuYu Hotel
15:00 – 18:00	Registration at the Lobby of the PuYu Hotel
17:00 – 17:45	<u>Session 1</u> Chairs: Qingming Luo and Lin Z. Li Keynote Presentation Lihong V. Wang , Washington University in St. Louis, USA Redefining the spatiotemporal limits of optical imaging: Photoacoustic tomography, wavefront engineering, and compressed ultrafast photography
18:00 –	Welcome reception at WaiTan Bar, 6F Sponsored by Hamamatsu Photonics (China)

Sunday 12 July

- 6:30 – 7:30 Taiji exercise (optional)
7:00 – 8:50 Breakfast at SoHO, 1F
8:50 – 9:00 Opening Remarks at Function Room 1 & 2, 3F

Qingming Luo and Lin Z. Li, Presidents of ISOTT 2015

Session 2: ISOTT History

Chair: Lin Z. Li

- 9:00 – 9:30 **Invited Presentation**
Duane F. Bruley, ISOTT Historian, Synthesizer, Inc., USA
ISOTT from the beginning: a tribute to our deceased members
(icons)

Session 3: Britton Chance Memorial I

Chair: Qingming Luo

- 9:30 – 10:15 **Keynote Presentation**
Hideaki Koizumi, Hitachi, Ltd., Japan
Mindscope: Present and future — Building on the legacy of
Britton Chance
10:15 – 10:30 *Coffee Break and Poster Viewing*

Session 4: Britton Chance Memorial II

Chairs: Brian Salzberg and Shaoqun Zeng

- 10:30 – 11:00 **Invited Presentation**
Arjun G. Yodh, University of Pennsylvania, USA
Recent advances to clinical blood flow measurement with
Diffuse Correlation Spectroscopy
11:00 – 11:30 **Invited Presentation**
Hanli Liu, University of Texas at Arlington, USA
Prefrontal cortex imaging under risk decision making and

resting-state brain network in young and older adults: a
volumetric DOT study

11:30 – 12:00

Invited Presentation

Shoko Nioka, University of Pennsylvania, USA

Optical properties quantification with CWS and diffusion theory,
two methods comparison; multi-distance method and multi-
wavelength method

12:00 – 13:30

Lunch

12:00 – 13:30

Publication Committee Meeting

Session 5: Britton Chance Memorial III

Chairs: Lihong Wang and Shoko Nioka

13:30 – 14:15

Keynote Presentation

Douglas C. Wallace, Children's Hospital of Philadelphia, USA

A mitochondrial etiology of rare and common diseases and the
quest for new diagnostic modalities

14:15 – 14:45

Invited Presentation

Avraham Mayevsky, Bar-Ilan University, Israel

Mitochondrial function evaluation : From isolated organelles to
patient monitoring, the 60 years legacy of Britton Chance

14:45 – 15:15

Invited Presentation

Lin Z. Li, University of Pennsylvania, USA

Perspectives on an integrative biomedical imaging system for
complex pathological processes

15:15 – 15:45

Invited Presentation

Qingming Luo, Huazhong University of Science and Technology,
China

Optical neuroimaging at Britton Chance Center for Biomedical
Photonics in China

15:45 – 16:00

Group Photo

16:00 – 17:00 Lab Tour: Britton Chance Center for Biomedical Photonics,
Wuhan National Laboratory for Optoelectronics, Huazhong
University of Science and Technology

17:00 – *Buses to farm food dinner, departing from both Hotel and Lab*

Monday 13 July

6:30 – 7:30 Taiji exercise (optional)

7:00 – 8:30 Breakfast at SoHO, 1F

Session 6: Multi-Modal Imaging/Spectroscopy & Instrumentation

Chairs: Valery V. Tuchin and Xiaoquan Yang

8:30 – 9:00 **Invited Presentation**

Joseph P. Culver, Washington University in St. Louis, USA

Mapping functional connectivity with optical imaging in humans and mouse models

9:00 – 9:30 **Invited Presentation**

Hao F. Zhang, Northwestern University, USA

Can optical coherence tomography quantify oxygen metabolism

9:30 – 9:40

Hengchang Guo, University of Maryland, USA

Intravital imaging of aging kidney using two-photon microscopy (TPM) and optical coherence tomography (OCT)

9:40 – 9:50

Zhenyang Ding, Tianjin University, China

In vivo rat kidney dysfunction responded to various ischemia time using optical coherence tomography (OCT), two photon microscopy (TPM), and near-infrared spectroscopy (NIRS)

9:50 – 10:00

Buhong Li, Fujian Normal University, China

Determination of optical and microvascular parameters of port wine stains using diffuse reflectance spectroscopy

10:00 – 10:10

Wei Song, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China

In vivo multimodal microscope integrating photoacoustics with two-photon fluorescence emission and second harmonic generation

10:10 – 10:20

Terence S Leung, University College London, UK

A screening tool for neonatal jaundice using digital imaging

10:20 – 10:30 *Coffee Break and Poster Viewing*

Session 7: Multi-Modal Imaging/Spectroscopy & Modeling

Chairs: Arjun G. Yodh and Yong Deng

10:30 – 11:00 **Invited Presentation**

Valery V. Tuchin, Saratov State University, Russian Federation

Blood perfusion and RBC velocity monitoring and control at tissue optical clearing

11:00 – 11:10 **Thanh Phong Phan**, University College London, UK

Spatial distribution of changes in oxidised cytochrome c oxidase during visual stimulation using broadband spectroscopy imaging

11:10 – 11:20 **Liang Tang**, University of Texas at San Antonio, USA

Gold nanorod array biochip and superparamagnetic nanoparticles for ultra-sensitive detection of cardiac biomarkers

Poster Flash Presentations

11:30 – 11:32 **Alexey O Trofimov**, Nizhniy Novgorod Medical State Academy, Russia

The features of the microcirculation in the perifocal zone of a chronic subdural hematoma

11:32 – 11:34 **Hao F. Zhang**, Northwestern University, USA

A multimodal method to noninvasively quantify inner retinal oxygen metabolic rate in vivo

11:34 – 11:36 **Yi He**, Institute of Optics and Electronics, Chinese Academy of Sciences, China

Design of a compact, bimorph deformable mirror based adaptive optics scanning laser ophthalmoscope

11:36 – 11:38 **Lin Z. Li**, University of Pennsylvania, USA

Correlation of magnetization transfer contrast and optical redox ratio in prostate cancer

- 11:38 – 11:40 **Guennadi Saiko**, Ryerson University, Canada
Mathematical model of an innate immune response to cutaneous wound in the presence of local hypoxia
- 11:40- 11:42 **Takashi Watanabe**, Hamamatsu Photonics K.K., Japan
Development of portable, wireless and smartphone controllable near-infrared spectroscopy system
- 11:42 – 11:44 **Zhenqiao Zhou**, Huazhong University of Science and Technology, China
Monitoring of oxygen dynamics by a fast acousto-optic scanning microscopy
- 11:44 – 11:46 **Zimei Rong**, University of Nottingham Ningbo China, China
Modelling of nitric oxide production and autoxidation based on an analytical solution

Session 8: Poster Session

Chair: Hua Shi

11:46 – 13:30 *Lunch and Poster Viewing*

Session 9: Cancer Metabolism

Chairs: Peter Vaupel and Zhihong Zhang

- 13:30 – 14:15 **Keynote Presentation**
Peter Vaupel, University Medical Center, Mainz, Germany
Tumor hypoxia: Causative mechanisms, microregional heterogeneities and the role of hypoxia-associated biomarkers
- 14:15 – 14:45 **Invited Presentation**
Kuangyu Shi, Technical University Munich, Germany
Molecular imaging of tumor hypoxia: Existing problems and their potential model-based solutions
- 14:45 – 15:15 **Invited Presentation**
Eiji Takahashi, Saga University, Japan
Life with less oxygen: Role of prolyl hydroxylase pathway

activation in pH_i stabilization in a cancer cell line

15:15 – 15:45

Invited Presentation

Zhihong Zhang, Huazhong University of Science and Technology, China

Intravital optical imaging of immunotherapy against melanoma in tumor microenvironment

15:45 – 15:55

Oliver Thews, University of Halle, Germany

Impact of the tumor microenvironment on the expression of inflammatory mediators in cancer cells

15:55 – 16:05

He N. Xu, University of Pennsylvania, USA

Redox biomarkers for breast cancer diagnosis and prognosis: two pilot clinical studies

16:05 – 16:20

Coffee Break and Poster Viewing

Session 10: Cellular Hypoxia and Mitochondrial Function

Chairs: Eiji Takahashi and Lin Z. Li

16:20 – 16:30

Nilufer Esen, Wayne State University, USA

Hypoxia induced miRNA Let7d has a role in pericyte differentiation

16:30 – 16:40

Sally C. Pias, New Mexico Institute of Mining and Technology, USA

High membrane cholesterol reduces oxygen permeation rate, with major implications for tissue-level transport

Poster Flash Presentations

16:40 – 16:42

Kyung A. Kang, University of Louisville, USA

MMP-14 triggered fluorescence of contrast agent

16:42 – 16:44

Maria Ulanova and Artemii Gekaliuk, Saratov State University, Russian Federation

Role of stress and nitrosamine containing foods in transformation gastric ulcers into stomach cancer: Circulatory

- and metabolic changes
- 16:44 – 16:46 **Eiji Takahashi**, Saga University, Japan
Directional migration of MDA-MB-231 cell under oxygen concentration gradients
- 16:46 – 16:48 **David K. Harrison**, Oroboros Instruments, Austria
Cytochrome redox states and respiratory control in mouse and beef heart mitochondria at steady-state levels of hypoxia
- 16:48 – 16:50 **Tongsheng Chen**, South China Normal University, China
Farnesylthiosalicylic acid enhances sensitivity of hepatocarcinoma cells to artemisinin derivatives
- 16:50 – 16:52 **Tongsheng Chen**, South China Normal University, China
Artesunate induces apoptosis via a Bax-mediated intrinsic pathway in hepatocellular carcinoma cells
- 16:52 – 16:54 **Ju Jin**, Guangdong Pharmaceutical University, China
Evaluation of free radical scavenging capacity and anti-oxidative damage effect of resveratrol glycoside, polydatin
- 16:54 – 16:56 **Nannan Sun**, Huazhong University of Science and Technology, China
Potential indexing of the invasive potential of breast cancer cells by their mitochondrial redox ratios
- 16:56 – 16:58 **Lingsong Qin**, Huazhong University of Science and Technology, China
Nanoscopy of protein-protein interaction in living cells by combination of bimolecular fluorescence complementation and PALM imaging
- 16:58 – 17:00 **Lingsong Qin**, Huazhong University of Science and Technology, China
Recording multiple cellular events during melittin-induced cell death by Förster resonance energy transfer imaging

17:00 –

Buses to Yangtze River Cruise, departing from Hotel

Tuesday 14 July

6:30 – 7:30 Taiji exercise (optional)

7:00 – 8:30 Breakfast at SoHO, 1F

Session 11: Brain Oxygenation and Function

Chairs: Joseph C. LaManna and Pengcheng Li

8:30 – 9:00 **Invited Presentation**

Jiangang Shen, The University of Hong Kong, Hong Kong, China

Peroxynitrite could be a molecular target for drug discovery from herbal medicine to prevent thrombolysis-induced hemorrhagic transformation in post-stroke treatment

9:00 – 9:30 **Invited Presentation**

Pengcheng Li, Huazhong University of Science and Technology, China

Title to be announced

9:30-9:40 **Angelo Compare**, University of Bergamo, Italy

Effects of positive and negative mood induction on the prefrontal cortex activity measured by near infrared spectroscopy

9:40 – 9:50 **Gemma Bale**, University College London, UK

Relationship between haemodynamics and metabolism in the injured neonatal brain during spontaneous oxygen desaturations

9:50 – 10:00 **Atsuhiko Tsubaki**, Niigata University of Health and Welfare, Japan

Correlation between cerebral oxyhemoglobin signal and blood pressure or skin blood flow during cycling exercise at different intensities: A near-infrared spectroscopy study

10:00 – 10:10 **Alexander Caicedo**, KU Leuven, Belgium

- Do changes in oxygenation levels drive changes in the amplitude of the EEG in premature infants?
- 10:10 – 10:20 **Keiichi Oyanagi**, Kobe City Medical Center General Hospital, Japan
Influence of cortical oxygenated hemoglobin inducing locomotor respiratory coupling during bicycle ergometer for light intensity
- 10:20 – 10:30 **Oxana Semyachkina-Glushkovskaya**, Saratov State University, Russian Federation
Hypoxia-associated cerebral circulatory disturbance in newborn rats with hemorrhagic stroke: Prognostic criteria
- 10:30 – 10:40 **Denis Bragin**, University of New Mexico, USA
Rheological modulation of cerebral blood flow by drag-reducing polymers attenuates post-traumatic brain ischemia and improves neurologic outcome in rats
- 10:40 – 10:50 **Yan Song**, Beijing Normal University, China
Prediction of electrophysiological response by anticipatory HbO activation during visuospatial attention as demonstrated by fNIRS-ERP measurements
- 10:50 – 11:10 *Coffee Break and Poster Viewing*

Session 12: Other Organ Function and Metabolism

Chairs: Oliver Thews and Terence Leung

- 11:10 – 11:40 **Invited Presentation**
Kui Xu, Western Reserve University, USA
Protective effect of dl-3-n-butylphthalide on recovery from cardiac arrest and resuscitation in rats
- 11:40 – 11:50 **George A. Perdrizet**, University of Connecticut, USA
HBOT protects skin from UV-A damage in a hairless mouse model

11:50 – 12:00 **Jeremy G. Thompson**, University of Adelaide, Australia
Hemoglobin A1 and B mRNA are expressed in the pre-implantation stage mouse embryo

Poster Flash Presentations

12:00 – 12:02 **Chenyang Gao**, Huazhong University of Science and technology, China

The mechanisms of PFC activity in verbal working memory—a NIRS study

12:02 – 12:04 **Yuta Murayama**, Nihon University, Japan

Relation between prefrontal cortex activity and respiratory rate during mental stress tasks: near infrared spectroscopy study

12:04 – 12:06 **Kaoru Sakatani**, Nihon University, Japan

Effects of antioxidant supplements (BioPQQ™) on cerebral blood flow and oxygen metabolism in the prefrontal cortex

12:06 – 12:08 **Katsunori Oyama**, Nihon University, Japan

Temporal comparison between NIRS and EEG signals during mental arithmetic task evaluated by self-organizing map

12:08 – 12:10 **Gemma Bale**, University College London, UK

Interrelationship between NIRS measurements of cerebral cytochrome-c-oxidase and systemic changes indicates injury severity in perinatal hypoxic ischaemic encephalopathy

12:10 – 12:12 **Masamichi Moriya**, Nihon University Itabashi Hospital, Japan

Effects of physical exercise on working memory and prefrontal cortex function in post-stroke patients

12:12 – 12:14 **Justin Skowno**, The Children's Hospital at Westmead, Australia

Cerebral oximetry during infant and neonatal anaesthesia: An observational study

12:14 – 12:16 **Jinyan Sun**, Guangdong Medical University, China

The role of phonological processing in semantic access of

- Chinese characters: A near-infrared spectroscopy study
- 12:16 – 12:18 **Denis Bragin**, University of New Mexico, USA
Drug-reducing polymers improved microcirculation and outcome after permanent middle cerebral artery occlusion in rats
- 12:18 – 12:20 **Tongsheng Chen**, South China Normal University, China
A comparative study of free and nano-liposomal resveratrol on sodium nitroprusside-induced rabbit chondrocytes apoptosis
- 12:20 – 12:22 **Jvcheng Zhang**, Honghe University, China
The role of free radicals in the photodynamic treatment of fibrotic skin diseases
- 12:22 – 12:24 **Natalie Tkachenko**, Saratov State University n.a. N.G. Chernyshevsky, Russia
Comparison of membrane-protective activity of plant antioxidants: *Gratiola officinalis* (L). extract, *Helichrysum arenarium* (L). *Moench* extract, and extract of diploid forms of anthocyan *Zea mays*
- 12:24 – 12:26 **Yashun Chen**, Honghe University, China
Spectroscopic studies on the interaction of the Pyridinoline cross-link in type I collagen with ZIF8-HB
- 12:26 – Free afternoon
- 12:30 – 14:30 Executive Committee Luncheon Meeting

Wednesday 15 July

6:30 – 7:30 Taiji exercise (optional)

7:00 – 8:30 Breakfast at SoHO, 1F

Session 13: Oxygen Transport in Sports, Diseases and Clinical Care

Chairs: Avraham Mayevsky and Dan Zhu

8:30 – 9:00 **Invited Presentation**

Peter E. Keipert, KEIPERT Corp., Life Sciences Consulting, USA

Clinical evaluation of MP4CO: A Phase 1b escalating-dose, safety and tolerability study in stable adult patients with Sickle Cell disease

9:00 – 9:10 **Ann B. Flood**, Geisel School of Medicine at Dartmouth, USA

Comparing the effectiveness of methods to measure oxygen in tissues for diagnosis and treatment

9:10-9:20 **Avraham Mayevsky**, Bar-Ilan University, Israel

Does brain sparing effect following hemorrhage remain intact under focal cerebral ischemia?

9:20 – 9:30 **Tomiyasu Koyama**, Hokkaido University, Japan

Oxygen transport to diseased hind limb by distal vein arterialization: A comparison of medical treatments

9:30 – 9:40 **Duane F. Bruley**, Synthesizer, Inc., USA

A compelling case for the use of perioperative zymogen protein C for increased patient safety

9:40 – 9:50 **Timon Cheng-Yi Liu**, South China Normal University, China

Quantitative biology of exercise-induced signal transduction pathways

9:50 – 10:10 *Coffee Break and Poster Viewing*

Session 14: Acupuncture, Meridians, and Primo Vascular System

Chairs: Jiangang Shen and Kyung A. Kang

- 10:10 – 10:40 **Invited Presentation**
Yi Guo, Tianjin University of Traditional Chinese Medicine, China
Research on initiating effect of acupuncture stimulation on acupoints
- 10:40 – 11:10 **Invited Presentation**
Kyung A. Kang, University of Louisville, USA
Chronological review on scientific findings of bonghan system and primo vascular system
- 11:10 – 11:40 **Invited Presentation**
Kwang-Sup Soh, Seoul National University, South Korea
Recent progress in primo vascular system research
- 11:40 – 11:50 **Pan Dong Ryu**, Seoul National University, South Korea
Identification of subcutaneous primo vascular system and possible relation to acupuncture meridian in rats

Poster Flash Presentations

- 11:50 – 11:52 **Kyung A. Kang**, University of Louisville, USA
Hollow gold nanoparticle for identifying PVS inside lymphatic vessel
- 11:52 – 11:54 **Chun Yang**, Shenzhen University, China
Effect of tensile load on ERK 1/2 and p38 signaling pathways in rat subcutaneous fascia
- 11:54 – 11:56 **Lin Yuan**, Shenzhen University, China
Human fascia innervation and neuroendocrine regulation
- 11:56 – 11:58 **Yasuhisa Kaneko**, Tokyo Medical University, Japan
The effect of acupuncture stimulation on muscle tissue oxygenation in different points
- 11:58 – 12:00 **Anton A. Namykin**, Saratov State University, Russian Federation
Evaluation of red blood cells deformability of newborn mice
- 12:00 – 12:02 **Min Chen**, Hospital of Huazhong University of Science and

- Technology, China
Clinical detection of diabetes microcirculation disturbance
- 12:02 – 12:04 **Xiaodong Liu**, Beijing Sport University, China
Characteristics of total hemoglobin, muscle oxygen saturation and EMG parameters during incremental exercises
- 12:04 – 12:06 **Shun Takagi**, Waseda University, Japan
Skeletal muscle oxygen dynamics during cycling exercise in post-angina pectoris patients
- 12:06 – 12:08 **Shun Takagi**, Waseda University, Japan
Low volume aerobic training heightens muscle deoxygenation in early post-angina pectoris patients
- 12:08 – 12:10 **Sayuri Fuse**, Tokyo Medical University, Japan
The effects of passive cycling exercise for twenty minutes on cardiorespiratory dynamics
- 12:10 – 12:12 **Yasuhisa Kaneko**, Tokyo Medical University, Japan
Regional differences of metabolic response during dynamic incremental exercise by ³¹P- CSI
- 12:12 – 12:14 **Ryotaro Kime**, Tokyo Medical University, Japan
Muscle deoxygenation and its heterogeneity changes after endurance training
- 12:14 – 12:16 **Fanghui Li**, Zhao Qing University, China
Effect of 8 weeks low-loads medium-intensity exercise on Bax and Bcl-2 protein and SIRT1/SIRT3 axis mRNA expression levels of aging rat skeletal muscle
- 12:16 – 12:18 **Gemma Bale**, University College London, UK
Relationship between cerebral oxygenation and metabolism during rewarming in newborn infants after therapeutic hypothermia following hypoxic-ischemic brain injury
- 12:20 – 14:00 *Lunch and Poster Viewing*

Session 15: EPR, MRS and MRI

Chairs: Harold Swartz and Howard J. Halpern

- 14:00 – 14:30 **Invited Presentation**
Harold Swartz, Geisel School of Medicine at Dartmouth, USA
First clinical tumor oximetry program project grant (PPG)
supported by NIH (NCI)
- 14:30 – 15:00 **Invited Presentation**
Howard J. Halpern, University of Chicago, USA
Electron paramagnetic resonance (EPR) images of O₂ show
triple negative breast cancer BACH1 model tumors are more
hypoxic than BACH1 knock down: Signaling path → Phenotype
- 15:00 – 15:30 **Invited Presentation**
Hao Lei, Wuhan Institute of Physics and Mathematics, Chinese
Academy of Sciences, China
Evidence of altered oxidative cerebral metabolism in a rat
model of type 1 diabetes
- 15:30 – 15:40 **Boris Epel**, University of Chicago, USA
Acceleration of time resolved EPR pO₂ images using a low-rank
tensor/navigator projection image model
- 15:40 – 15:50 **Harold Swartz**, Geisel School of Medicine at Dartmouth, USA
EPR oximetry investigation of hyperbaric O₂ pre-treatment for
tumor radiosensitization
- 15:50 – 16:00 **Huagang Hou**, Geisel School of Medicine at Dartmouth, USA
Fabrication and evaluation of a highly sensitive polymer-
encapsulated paramagnetic sensor for clinical EPR oximetry

Poster Flash Presentations

- 16:00 – 16:02 **Howard J. Halpern**, University of Chicago, USA
Electron paramagnetic resonance (EPR) images of O₂ of
individual mouse breast ducts: Monitoring development of

- early cancer and normal duct and tumor oxygenation
- 16:02 – 16:04 **Boris Epel**, University of Chicago, USA
Multimodality image registration using a general animal
immobilization platform fabricated with 3D printing
- 16:04 – 16:06 **Zhiwei Qiao**, Shanxi University, China
Parameters determination of ASD-POCS algorithm serving for
EPR oxygen imaging
- 16:06 – 16:20 *Break & Poster Removing*

Session 16: Members General Meeting

Chairs: Qingming Luo and Lin Z. Li

- 16:20 – 17:30 ISOTT Members Annual General Meeting
- 18:00 – *Awards Banquet*