

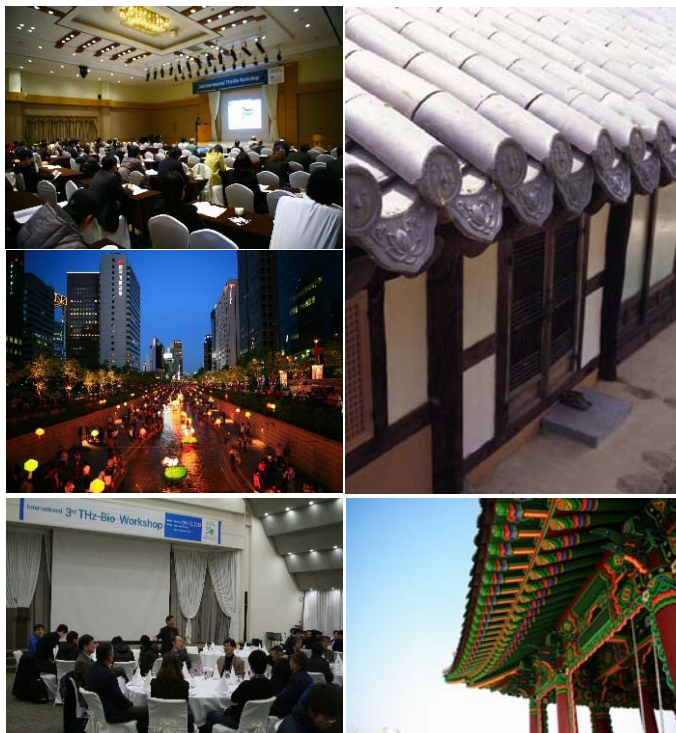


www.thzbioworkshop2014.com

# International 5<sup>th</sup> THz-Bio Workshop 2014

**April 2: Mini-Course**  
**April 3 - 4: Workshop**

**Seoul National University  
Seoul, Korea**



**Co-organized by  
KAERI WCI for Quantum Beam-based Radiation Research**

## SPONSORING INSTITUTIONS



## MORE INFORMATION

**Center for THz-Bio Application Systems and Department of  
Physics and Astronomy**

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## PROGRAM

Mini-Course: April 2, Wed  
Workshop: April 3-4, Thu & Fri

## KEY DATES

Abstract Deadline: March 5 (submission: jisunlee@snu.ac.kr)  
Registration Deadline: March 15

## SUBJECTS

THz Instruments, THz Imaging  
THz-Bio Effect, THz-Solvation

## INVITED SPEAKERS

Vincent Wallace (U. of Western Australia, Australia)  
Emma MacPherson (Chinese U. of Hong Kong, China)  
Yuri Feldman (The Hebrew U. of Jerusalem, Israel)  
Olga Kovalchuk (U. of Lethbridge, Canada)  
Martina Havenith (Ruhr-U. Bochum, Germany)  
R Holland Cheng (UC, Davis, USA)  
Andrea Markelz (SUNY Buffalo, USA)  
Gian Piero Gallerano (ENEA, Italy)  
Hiromichi Hoshina (RIKEN, Japan)  
Toshihiko Kiwa (Okayama U., Japan)  
Hajime Torii (Shizuoka U., Japan)  
Noriko Yaekashiwa (RIKEN, Japan)  
Masayoshi Tonouchi (Osaka U., Japan)  
Chi-Kuang Sun (Natl. Taiwan U., Taiwan)  
Keisuke Tominaga (Kobe U., Japan)  
Xi-Cheng Zhang (U. of Rochester, USA)  
Alexander Shkurinov (Lomonosov Moscow State U., Russia)  
Gun-Sik Park (SNU, Korea)  
Seong-Tae Han (KERI, Korea)  
Hyeonyong Choi (Yonsei U., Korea)  
Wonho Jhe (SNU, Korea)  
Kyoungyun Park (ETRI, Korea)  
Jae-Sung Rieh (Korea U., Korea)  
Pilhan Kim (KAIST, Korea)  
Young Uk Jeong (KAERI, Korea)  
Joo-Hiuk Son (U. of Seoul, Korea)  
Haewook Han (POSTECH, Korea)  
Tae-In Jeon (Korea Maritime U., Korea)  
Min, Bumki (KAIST, Korea)  
Kyungwan Kim (Chungbuk Natl. U., Korea)  
Jong-Seok Lee (GIST, Korea)  
Heon Kang (SNU, Korea)

## REGISTRATION

### Mini-Course (KRW)

Student - 200,000 / Regular - 400,000

### Workshop (KRW)

Student - 350,000 / Regular - 500,000 (Early-Bird, by March 15th)  
Student - 400,000 / Regular - 600,000 (On Site)

## WORKSHOP CONTACTS

General Chair: Gun-Sik Park (SNU / gunsik@snu.ac.kr)  
Program Chair: Haewook Han (POSTECH / hhan@postech.ac.kr)  
Finance Chair: Young Uk Jeong (KAERI / yujung@kaeri.re.kr)  
Publicity Chair: Changsoo Kim (SNU / changsoon@snu.ac.kr)

## LOCAL ORGANISING COMMITTEE

Chang-Beom Ahn (Kwangwoon U.), Jaewook Ahn (KAIST)  
Hyuckjae Choi (U. of Ulsan College of Med.), Haewook Han (POSTECH), Joon Koo Han (SNU), Young Uk Jeong (KAERI)  
Changsoo Kim (SNU), Yong Hyup Kim (SNU), Oh Sang Kwon (SNU), Hochong Park (Kwangwoon U.), Ikmo Park (Ajou U.), Joo-Hiuk Son (U. of Seoul), Sung Jin Jo (SNU), Jaehun Park (POSTECH), Daesu Lee (KRIS), Hyang-Sook Chun (Chung-Ang U.), Kwangyong Kang (ETRI), Chul Sik Kee (GIST), Kyoungyun Park (ETRI), Jae-Sung Rieh (Korea U.), Jung-II Kim (KERI), Pilhan Kim (KAIST), Hyunyong Choi (Yonsei U.), Eunmi Choi (UNIST)

## INTERNATIONAL ORGANISING COMMITTEE

Gian Piero Gallerano, Chair (ENEA, Italy), Kiyomi Sakai (NICT, Japan), Shenggang Liu (UESTC, China), Andrea Markelz (SUNY Buffalo, USA), Peter Siegel (JPL, USA), Xi-Cheng Zhang (U. of Rochester, USA), Hanjo Lim (Ajou U., Korea), Jin-Koo Rhee (Dongguk U., Korea), Chinha Chung (SNU, Korea)

# Program for 5<sup>th</sup> International THz-Bio Workshop 2014

## Engineer House, SNU, Seoul

### Mini-Course

April 2, Wednesday

	09:00~09:50	<b>Min, Bumki (KAIST, Korea)</b> Graphene for THz Optoelectronics
	09:50~10:40	<b>Jong-Seok Lee (GIST, Korea)</b> Spectroscopic Applications of THz Technology
	10:40~10:50	Coffee Break
	10:50~11:40	<b>Vincent Wallace (U. of Western Australia, Australia)</b> Biomedical Applications of THz Technology
	11:40~13:10	Lunch
<b>Tutorial</b>	13:10~14:00	<b>Martina Havenith (Ruhr-U. Bochum, Germany)</b> Introduction into THz Spectroscopy as a Tool to Probe Hydration Dynamics
	14:00~14:50	<b>Yuri Feldman (The Hebrew U. of Jerusalem, Israel)</b> When Dielectric Spectroscopy Meets THz Spectroscopy the Tale of Two Estranged Brothers
	14:50~15:00	Coffee Break
	15:00~15:50	<b>Kyungwan Kim (Chungbuk Natl. U., Korea)</b> Intro. to Time Domain Spectroscopy and Broadband THz Studies on Condensed Matters
	15:50~16:40	<b>Wonho Jhe (SNU, Korea)</b> Nanoscale Water: Physics and Applications
	14:40~17:00	Closing

### Workshop

April 3, Thursday

	08:00~09:00	Registration, Coffee & Donuts
	09:00~09:40	Opening and Congratulatory Remarks
<b>Session I THz-Bio General Issue</b>	09:40~10:15	<b>Martina Havenith (Ruhr-U. Bochum, Germany)</b> Observing the Rattling Modes of Ions in the THz Range
	10:15~10:50	<b>Yuri Feldman (The Hebrew U. of Jerusalem, Israel)</b> Can the Chiral Structure of Human Sweat Ducts Twist a Reflected Sub-mm Electromagnetic Wave?
	10:50~11:05	Coffee Break
	11:05~11:40	<b>Andrea Markelz (SUNY Buffalo, USA)</b> Fingerprinting of Protein Dynamics
	11:40~12:15	<b>Alexander Shkurinov (Lomonosov Moscow State U., Russia)</b> THz Image Processing for the Skin Cancer Diagnostics
	12:15~13:30	Lunch
<b>Session II THz-Bio Imaging</b>	13:30~14:05	<b>Vincent Wallace (U. of Western Australia, Australia)</b> Clinical Applications of THz Technology – Detection of Tumour Margins
	14:05~14:40	<b>Toshihiko Kiwa (Okayama U., Japan)</b> Novel Biosensing by Laser-Excited THz Technology
	14:40~14:55	<b>Joo-Hiuk Son (U. of Seoul, Korea)</b> Challenges in THz Biomedical Applications
	14:55~15:10	<b>Pilhan Kim (KAIST, Korea)</b> In Vivo Analysis of Cellular-level Inflammatory Response Induced by Pulsed 2.7 THz Wave Irradiation
	15:10~15:25	<b>Jae-Sung Rieh (Korea U., Korea)</b> Solid-state Electronic Components for THz Imaging
	15:25~15:40	Coffee Break
<b>Session III THz-Bio Spectroscopy</b>	15:40~16:15	<b>Chi-Kuang Sun (Natl. Taiwan U., Taiwan)</b> THz Spectroscopy of Human Blood Coagulation
	16:15~16:50	<b>Emma MacPherson (The Chinese U. of Hong Kong, China)</b> Utilizing Temp. Dependent THz Studies to Reveal Mol. Info.
	16:50~17:20	<b>Noriko Yaekashiwa (RIKEN, Japan)</b> A Research on the Non-Thermal Effect of External THz Irradiation on Cultured Human Cells
	17:20~17:35	<b>Hyunyong Choi (Yonsei U., Korea)</b> Ultrafast THz and Optical Spectroscopy of Reactive Oxygen Species
	17:35~18:40	Poster Session
	18:40~20:30	Banquet

April 4, Friday

	08:00~09:00	Registration, Coffee & Donuts
<b>Session IV THz Instruments</b>	09:00~09:35	<b>Masayoshi Tonouchi (Osaka U, Japan)</b> Frequency Tunable Narrow Band Time Domain THz Source
	09:35~09:50	<b>Young Uk Jeong (KAERI, Korea)</b> Ultrafast THz-pump and Electron/X-ray-probe Facility with an RF Photogun-based Accelerator
	09:50~10:05	<b>Kyoung Hyun Park (ETRI, Korea)</b> THz Freq. Domain Spectrometer for Non-contact and Conductivity Meas. using Photon. Dev.
	10:05~10:20	<b>Tae-In Jeon (Korea Maritime U., Korea)</b> THz Parallel-plate Waveguides and its Applications
	10:20~10:35	<b>Seong-Tae Han (KERI, Korea)</b> Development of the Source and Detector of an Active Real-Time THz Imaging System for Food-inspection
	10:35~10:50	Coffee Break
<b>Session V THz Hydration 1</b>	10:50~11:25	<b>R Holland Cheng (U. of California, Davis, USA)</b> Encapsulation of DNA Vaccine in Solution
	11:25~12:00	<b>Hajime Torii (Shizuoka U., Japan)</b> Theoretical Appr. to the Intensity Generation Mech. of the THz Spectrum of Liquid Water
	12:00~12:15	<b>Heon Kang (SNU, Korea)</b> Transport Dynamics of Protons and Hydroxides in Liquid and Amorphous Solid Water
	12:15~12:30	<b>Wonho Jhe (SNU, Korea)</b> Fluid Dynamics of Hydration Water Layer
	12:30~13:30	Lunch
<b>Session VI THz Hydration 2</b>	13:30~14:05	<b>Hirohichi Hoshina (RIKEN, Japan)</b> Low-Freq. Vibrational Spectroscopy of Macromolecules
	14:05~14:40	<b>Keisuke Tominaga (Kobe U., Japan)</b> THz spectroscopy on Condensed Matter; Molecular Crystals, Aqueous Solutions, and Proteins
	14:40~14:55	<b>Gun-Sik Park (SNU, Korea)</b> Ion Hydration in Biomolecules
	14:55~15:10	<b>Haewook Han (POSTECH, Korea)</b> THz Spectroscopy of Liquid Water
	15:10~15:25	Coffee Break
<b>Session VII THz Effect</b>	15:25~16:00	<b>Olga Kovalchuk (U. of Lethbridge, Canada)</b> THz Radiation - A New Frontier in Health Research
	16:00~16:35	<b>Gian Piero Gallerano (ENEA, Italy)</b> Recent Studies on the Exposure of Biological Systems to THz Radiation: Human Fibroblasts as in-vitro Cellular Model
	16:35~17:10	<b>Xi-Cheng Zhang (U. of Rochester, USA)</b> THz Wave Generation from nm Thick Metal Films Excited by Asymmetrical Optical Fields
	17:10~17:30	Closing Remark