## 4<sup>th</sup> GIST-Caltech Workshop on Innovative Research



Dates : November **12-13**, 2015 Venue : Oryong Hall, Room 101, GIST

## Thursday, November 12, 2015

Time	Speaker (Collaborator)	Title	
13:00~13:05	Prof. Heung-No Lee, GIST	Opening Address, Dean of Research, GIST	
	Session 1. Ch	air Prof. Kang Taek Lee	
13:05~13:20	Prof. Raymond J. Deshaies, Caltech (Prof. Chul-Seung Park, GIST)	The thalidomide receptor CRL4CRBN targets an acetylated degron in glutamine synthetase	
13:20~13:40	Prof. Chul-Seung Park, GIST (Prof. Raymond J. Deshaies, Caltech)	Cereblon: regulation mechanism of energy metabolism and potential for metabolic syndrome	
13:40~13:55	Prof. Robert Grubbs, Caltech (Prof. Jae-Suk Lee, GIST)	Brush Block polymers for the creation of complex structures	
13:55~14:15	<b>Prof. Jae-Suk Lee, GIST</b> (Prof. Robert Grubbs, Caltech)	Synthesis of novel polymers through combination of living anionic polymerization and metathesis polymerization	
14:15~14:30	Prof. Viviana Gradinaru, Caltech (Prof. Hyong-Ihl Kim, GIST)	Visualizing the Activity and Anatomy of Brain Circuits: Optogenetic Sensors and Tissue Clearing Approaches	
14:30~14:50	Prof. Hyong-Ihl Kim, GIST (Prof. Viviana Gradinaru, Caltech)	Optogenetic stimulation of sensori-parietal cortex to augment motor recovery in chronic capsular stroke	
14:50~15:00		Coffee Break	
Session 2. Chair Prof. Chul-Seung Park			
15:00~15:15	Prof. Long Cai, Caltech (Prof. Kang Taek Lee, GIST)	In situ profiling in single cells by FISH SCALYS	
15:15~15:35	Prof. Kang Taek Lee, GIST (Prof. Long Cai, Caltech)	Fast and background-free 3D imaging of single living cells using upcoverting nanoparticles(UCNPs)	
15:35~15:50	Prof. David Tirrell, Caltech (Prof. Inchan Kwon, GIST)	Time-resolved and Cell-selective Analysis of Cellular Protein Synthesis	
15:50~16:10	Prof. Inchan Kwon, GIST (Prof. David Tirrell, Caltech)	Spatially-controlled bioconjugation of proteins and proteomic analysis of iPS cell generation	
16:10~16:30	Prof. Yong-Chul Kim, GIST (Prof. Willam A. Goddard III, Caltech)	Multi-target Strategies for the Synergistic Modulation of Neuropathic Pain Signaling toward Innovative Therapeutic Intervention	
16:30~17:00	Prof. Willam A. Goddard III, Caltech (Prof. Yong-Chul Kim, GIST)	Structure-based discovery and experimental validation of novel pain therapeutic agents employing multi-target approach for the synergistic inhibition of pain signals mediated by GPCR and Ion Channel receptor	
17:00~17:10		Coffee Break	
	Session 3. Cha	air Prof. ${ m x}$ Inchan Kwon	
17:10~17:30	Prof. Young-Dahl Jho, GIST (Prof. Austin Minnich, Caltech)	Engineering nanoscale heat waves for terahertz information transfer	
17:30~17:50	Prof. David Hsieh, Caltech (Prof. Jong Seok Lee, GIST)	Ultrafast photo-induced electronic phase transition in a perovskite ruthenate	
17:50~18:10	Prof. Jong Seok Lee, GIST (Prof. David Hsieh, Caltech)	Spectroscopic investigation on 4d- and 5d-transition metal oxides of ruthenates and iridates	
18:10~18:30	<b>Prof. SungYang, GIST</b> (Prof. James R. Heath, Caltech)	Caltech-GIST Advances in microchip-based proteomics Advanced Microchip-based Single Cancer Cell Assay for High-throughput, Multiplexed Proteomics	
18:30~	Closing		
18:30~		Dinner	

Time         Speaker (Collaborator)         Title           0900-0920         Prof. James R. Heath, Caltech         Single Cell Analysis of Tumor Materials           0920-0940         Prof. Sung Yang, Caltech         Optical time reversal for deep tissue optical focusing           0920-0940         Prof. James C. Heath, Caltech         Quantifying piezo-induced properties of ZnO p-n           1640-1700         Prof. Andre Heelz, Caltech         Building the Nuclear Pore Complex Piece by Piece           1020-1020         Prof. Andre Heelz, Caltech         Building the Nuclear Pore Complex Piece by Piece           1020-1120         Prof. Brain M. Stoltz, Caltech         Collaborative Catalysis A GIST-Caltech Initiative in           1020-1120         Prof. Richard C. Flagan, Caltech         Quantifying the Urban Air Pollution Dose           1120-1140         Prof. Andref Faraon, Caltech         Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals           1140-120         Prof. Marce Bernardi, Caltech         Recent Experiences in Science           1220-1240         Prof. Julie Kornfield, Caltech         Recent Experiences in Science           1240-1340         Prof. Andref Bragon, Caltech         Recent Experiences in Science           1240-1340         Prof. Marce Bernardi, Caltech         Recent Experiences in Science           1240-1340         Prof. Marce Bernardi, Caltech <t< th=""><th></th><th>Friday, Nov</th><th>vember 13, 2015</th></t<>		Friday, Nov	vember 13, 2015	
09:00-09:20 Is00-1620         Prof. James R. Heath, Caltech (Prot. Sunglyang, GIST)         Single Cell Analysis of Tumor Materials           09:20-09:40 (Prof. Euhenon Chung, GIST)         Optical time reversal for deep tissue optical focusing           09:40-10:00 (Prof. Julia R. Greer, Caltech (Prof. Beng-Joong Kim, GIST)         Optical time reversal for deep tissue optical focusing in stru electron macroscopy techniques           10:00-10:20 (Prof. Prof. Brain M. Stotz, Caltech (Prof. Sukwon Hong, GIST)         Building the Nuclear Pore Complex Piece by Piece           10:20-11:20 (Prof. Fachard C. Flagan, Caltech (Prof. Sukwon Hong, GIST)         Coffee Break           11:00-11:20 (Prof. Richard C. Flagan, Caltech (Prof. Sukwon Hong, GIST)         Quantifying the Urban Air Pollution Dose           11:00-11:20 (Prof. Austin Minnich, Caltech (Prof. Sukwon Hong, GIST)         Quantifying the Urban Air Pollution Dose           11:20-11:40 (Prof. Austin Minnich, Caltech (Prof. Sustin Minnich, Caltech (Prof. Sugnog Lalline, GIST)         Engineering heat dissipation for efficient LEDs           12:20-12:40 (Prof. Julie Kornfield, Caltech (Prof. Julie Kornfield, Caltech)         Utrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations           12:20-12:40 (Prof. Julie Kornfield, Caltech)         Spin and Secudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators           12:40-13:40 (Prof. Giyoong Tae, GIST)         Scattering Lens capable of variable focusing and 3D patterning for Deep tissue light delivery using functional nanocarriers           12:4	Time	Speaker (Collaborator)	Title	
1600-1620         (Prof. Sung Yang, GIST)         Single Cell Analysis of Tumor Materials           06920-09340         Prof. Etheon Chung, GIST)         Optical time reversal for deep tissue optical focusing           1640-1640         (Prof. Euheon Chung, GIST)         Optical time reversal for deep tissue optical focusing           06940-1000         Prof. Andre Roer, Catech (Prof. Buileon Chung, GIST)         Quantifying piezo-induced properties of ZnO p-n homojunction nanowires and nano-lattices using in stu electron microscopy techniques           10:00-1020         Prof. Andre Hoelz, Cattech         Building the Nuclear Pore Complex Piece by Piece           10:20-1040         Prof. Brain M. Stoltz, Cattech         Colfee Break           10:40-1130         Coffee Break         Session 2. Chair Prof. Byoung S. Ham           11:00-1120         Prof. Richard C. Flagan, Catech         Quantifying the Urban Air Pollution Dose           11:20-1200         Prof. Austin Minnich, Catech         Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals           11:20-120         Prof. Marco Bernardi, Catech         Nano-photonic plas and ano-photons in Materials from First-Principles Calculations           12:20-1240         Prof. Marco Bernardi, Catech         Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals           12:20-1240         Prof. Marco Bernardi, Catech         Nano-photonic quantora spectros in Materials from First-Principles Calcu		Session 1. Ch	air Prof. Sukwon Hong	
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Organization         Proc. Julia R. Greek, Caltech         Immogination anowires and nano-lattices using in situ electron microscopy techniques           1000–1020         Prof. Andre Hoelz, Caltech         Building the Nuclear Pore Complex Piece by Piece           1020–1120         Prof. Andre Hoelz, Caltech         Building the Nuclear Pore Complex Piece by Piece           1020–1120         Prof. Andre Hoelz, Caltech         Collaborative Catalysis A GIST-Caltech Initiative in Synthetic Chemistry           1120–1140         Prof. Richard C. Flagan, Caltech         Quantifying the Urban Air Pollution Dose           1120–1140         Prof. Andrei Faraon, Caltech         Quantifying the Urban Air Pollution Dose           1120–1140         Prof. Andrei Faraon, Caltech         Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals           1120–1140         Prof. Andrei Faraon, Caltech         Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals           1120–1140         Prof. Julic Komfield, Caltech         Utrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations           1220–1240         Prof. Julic Komfield, Caltech         Spin and Pseudo-spin Dynamics of Dirac Fermions In Graphene and Topological Insulators           1240–1340         Lunch         Scattering Lens capable of variable focusing and 3D patterning for Deep tissue light delivery           14400–1420         Prof. Biong-Joong Kim, GIST         De		5 5	Optical time reversal for deep tissue optical focusing	
17:00-17:20     Prof. Andre Hole/, Callech     building the Nuclear Pole Complex Piece by Piece       10:20-17:40     Prof. Brain M. Stotz, Caltech     Collaborative Catalysis A GIST-Caltech Initiative in Synthetic Chemistry       17:40-18:00     Coffee Break       Coffee Break       Session 2. Chair Prof. Byoung S. Ham       11:00-11:20     Prof. Richard C. Flagan, Caltech     Quantifying the Urban Air Pollution Dose       18:00-18:20     Prof. Andrei Faraon, Caltech     Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals       11:140-12:00     Prof. Austin Minnich, Caltech     Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals       11:20-12:01     Prof. Marco Bernardi, Caltech     Ultrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations       12:20-12:02     Prof. Marco Bernardi, Caltech     Becent Experiences in Science       12:20-12:04     Prof. Julie Komfield, Caltech     Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators       12:40-13:00     Prof. Lille Komfield, Caltech     Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators       14:40-14:20     Prof. Biogna Tae, GIST (Prof. Julie Komfield, Caltech)     Scattering Lens capable of variable focusing and 3D patterning for Deep tissue light delivery       14:20-14:40     Prof. Bung-Joong Kim, GIST (Prof. Julia R. Greer, Caltech)     Dide nanotrusses and nanowires for low k			homojunction nanowires and nano-lattices using in situ	
17.20~17.40(Prof. Sukwon Hong, GIST)Synthetic Chemistry10.40~11:00Coffee Break11.100~11:20Prof. Richard C, Flagan, CaltechQuantifying the Urban Air Pollution Dose11.20~11.40Prof. Andrei Faraon, CaltechNano-photonic quantum light-matter interfaces based on rare-earth doped crystals11.40~12.00Prof. Andrei Faraon, CaltechNano-photonic quantum light-matter interfaces based on rare-earth doped crystals11.40~12.00Prof. Austin Minnich, Caltech 1840~1900Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals12.20~12.01Prof. Marco Bernardi, Caltech 1940~1920Ultrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations12.20~12.02Prof. Julie Komfield, Caltech 1940~1920Recent Experiences in Science12.20~12.01Prof. Julie Komfield, Caltech 1940~1340Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators14.40~14.00Prof. Giyoong Tae, GIST (Prof. Giule Komfield, Caltech)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14.20~14.40Prof. Giyoong Tae, GIST (Prof. Giule Komfield, Caltech)Scattering Lens capable of variable focusing and 3D paterning for Deep tissue light delivery14.40~15.02Prof. Buile Komfield, Caltech)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14.20~14.40Prof. Giyoong Tae, GIST (Prof. Julie Komfield, Caltech)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14.40~15.02Prof. Bain M, Stolz		Prof. Andre Hoelz, Caltech	Building the Nuclear Pore Complex Piece by Piece	
Conce break         Conce break         Conce break         Session 2. Chair Prof. Byoung S. Ham         11:00–11:20       Prof. Richard C. Flagan, Caltech       Quantifying the Urban Air Pollution Dose         11:20–11:40       Prof. Andrei Faraon, Caltech       Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals         11:40–12:00       Prof. Austin Minnich, Caltech       Engineering heat dissipation for efficient LEDs         12:00–12:20       Prof. Marco Bernardi, Caltech       Ultrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations         12:20–12:20       Prof. Marco Bernardi, Caltech       Ultrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations         12:20–12:20       Prof. Marco Bernardi, Caltech       Lunch         12:20–12:20       Prof. Marco Bernardi, Caltech       Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators         12:40–13:40       Prof. Sule Komfield, Caltech       Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators         14:00~14:20       Prof. Giyoong Tae, GIST       Delivery of therapetic proteins across epithelial layer using functional nanocarriers         14:20~14:40       Prof. Buile Komfield, Caltech       Delivery of therapetic proteins across epithelial layer using functional nanocarriers         14:20				
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1800-1820Prof. Richard C. Flagan, CattechQuantifying the Urban AIT Pollution Dose11:20~11:40Prof. Andrei Faraon, Cattech (Prof. Nausin Minnich, Cattech (Prof. Young-Dahl Jho, GIST)Nano-photonic quantum light-matter interfaces based on rare-earth doped crystals11:40~12:00Prof. Austin Minnich, Cattech (Prof. Young-Dahl Jho, GIST)Engineering heat dissipation for efficient LEDs12:00~12:20 19:00-19:20Prof. Marco Bernardi, Cattech (Prof. Giyoong Tae, GIST)Ultrafast Dynamics of Excited Electrons in Materials from First-Principles Calculations12:20~12:40 19:40~20:40Prof. Nai-Chang Yeh, Cattech (Prof. Giyoong Tae, GIST)Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators14:00~14:20 (Prof. Giyoong Tae, GIST)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14:20~14:40 (Prof. Chang Ger, GIST) (Prof. Chang Ger, GIST) (Prof. Chang Ger, GIST)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14:20~14:40 (Prof. Chang Ger, GIST) (Prof. Chang Yeh, Cattech)THz Time Domain Spectroscopy for Studying Carrier Dynamics in Grapheneand Topological Insulators15:20~15:20 (Prof. Sug-ong Eom, GIST) (Prof. Sug-ong Pong Kim, GIST (Prof. Julia R. Greer, Cattech)Coffee Break15:20~15:20Session 4. Chair Prof. Jong Seok Lee15:40~16:00Prof. Sug-ong Park, GIST (Prof. Sug-ong Park, GIST)16:00~16:20Prof. Sug-ong Park, GIST (Prof. Andrei Faraon, Cattech)16:00~16:20Prof. Sug-ong Park, GIST (Prof. Sug-ong Park, GIST)16:00~16:20Prof. Sug-ong	Session 2. Chair Prof. Byoung S. Ham			
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19:20-19:40(Prof. Giyoong Tae, GIST)Recent Experiences in Science12:40~13:40Lunch19:40-20:40Session 3. Chair Prof. Giyoong Tae13:40~14:00Prof. Nai-Chang Yeh, Caltech (Dr. Chul-Sik Kee, GIST)Spin and Pseudo-spin Dynamics of Dirac Fermions in Graphene and Topological Insulators14:00~14:20Prof. Giyoong Tae, GIST (Prof. Julie Komfield, Caltech)Delivery of therapetic proteins across epithelial layer using functional nanocarriers14:20~14:40Prof. Euiheon Chung (Dr. Taejoong Eom, GIST) (Prof. Kai-Chang Yeh, Caltech)Scattering Lens capable of variable focusing and 3D patterning for Deep tissue light delivery14:40~15:00Dr. Chul-Sik Kee, GIST (Prof. Nai-Chang Yeh, Caltech)THz Time Domain Spectroscopy for Studying Carrier Dynamics in Grapheneand Topological Insulators15:00~15:20Prof. Bong-Joong Kim, GIST (Prof. Julia R. Greer, Caltech)Oxide nanotrusses and nanowires for low k dielectric and sensing applications15:40~16:00Prof. Sung-Gyoo Park, GIST (Prof. Sung-Gyoo Park, GIST)Regulatory T cell-derived TGF- β regulates the Differentiation and Function of Myeloid-Derived Suppressor Cells16:00~16:20Prof. Sukwon Hong, GIST (Prof. Brain M. Stoltz, Caltech)Direct Alkynylation of Carbonyl Compounds by Cooperative Catalysts16:20~16:40Prof. Byoung S. Ham, GIST (Prof. Andrel Faraon, Caltech)Ouantum coherence control for measurement-based quantum comp using ultralong solid-state quantum memory		Prof. Marco Bernardi, Caltech		
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