

# Zee Hwan Kim

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## CURRENT RESEARCH INTERESTS: PLASMONICS

- Real-space studies of nanoparticle plasmons
- IR- and Raman-based vibrational nanoscopy
- Single-molecule SERS

## EDUCATION and PROFESSIONAL EXPERIENCE

<i>Fall 2013 – present</i> <i>Associate Professor</i>	<b>Seoul National University</b>	<b>Seoul, Korea</b>
<i>Spring 2005 – 2013</i> <i>Associate and Assistant Professor</i>	<b>Korea University</b>	<b>Seoul, Korea</b>
<i>Fall 2002 – Spring 2005</i> <i>Postdoctoral Fellow, Professor Stephen R. Leone</i>	<b>University of California, Berkeley</b>	<b>Berkeley, CA</b>
<i>Spring 1998 – fall 2002</i> <i>Ph. D., Physical Chemistry, September 2002, Professor Richard N. Zare</i>	<b>Stanford University</b>	<b>Stanford, CA</b>
<i>Spring 1995 -</i> <i>M. S (not confirred)</i>	<b>Seoul National University</b> <i>Prof. Seong Keun Kim</i>	<b>Seoul, Korea</b>
<i>Spring 1989 -Fall 1994</i> <i>B. S</i>	<b>Seoul National University</b>	<b>Seoul, Korea</b>

## AWARDS

- *Seok-Tap Teaching Award*, 2011, Korea University
- *KCS-Wiley Young Chemist Award*, 2010, KCS and Wiley
- *Annual Reviews Prize in Physical Chemistry*, September 2002, Annual Reviews Board, Palo Alto, California
- *Franklin Veatch Memorial Fellowship*, 2000-2001, Stanford University, Stanford, California
- *Graduation with Honor*, 1995 spring, Seoul National University, Seoul, Korea
- *SNU Chemistry Alumni Fellowship* 1991 and 1994, Seoul National University, Seoul, Korea

## RECENT PROFESSIONAL ACTIVITIES

- *Program Committee, NFO-12, 12th International conference on near-field optics, nanophotonics and related techniques (San Sebastian, Spain, 2012)*

- *Program Committee, SPP5, the 5<sup>th</sup> international conference on surface plasmon photonics (2011, Busan)*

## MAJOR INVITED LECTURES

### Scheduled in 2013:

- *Progress in Electromagnetics Research Symposium, Stockholm, Sweden, 2013.*
- *Photonics of Functional Nanomaterials, Hong Kong, 2013*
- *ICMAT2013, 7<sup>th</sup> International Conference on Materials for Advanced Technologies, Singapore, 2013*
- *JSAP-MRS Joint Symposia, Kyoto, Japan, 2013*

### Recent:

- *ICORS-12, International Conference on Raman Spectroscopy, Bangalore, India, 2012*
- *VAS-14, the 14<sup>th</sup> International Conference on Vibrations at Surface, Kyoto, Japan, 2012*
- *Photonics West, San Francisco, January 2012*
- *Gordon Research Conference on Plasmonics, Main, USA, 2010*
- *Frontiers of Plasmonics, Xian, China, Sept. 2010*

## PUBLICATIONS

- H.- K. Choi, W.- H. Park and Z. H. Kim, “Driving and Observing Photochemical Kinetics of individual molecules with gap-plasmons” (in prep, 2013).
- D. S. Kim, D. H. Seo, S. H. Ahn, H. J. Song and Z. H. Kim\*, “Conductively coupled plasmons in a heterometallic nano-rod” (in prep. 2013).
- D. S. Kim, H.- S. Kwon, A. Y. Nikitin, S. M. Ryu, F. J. Garcia-Vidal, H. Min and Z. H. Kim\*, “Stacking-specific infrared near-field imaging of multilayer graphenes” (in preparation, 2013)
- Zee Hwan Kim, “Single-molecule SERS: current status and future perspective”, *Frontiers of Physics*, 2013, doi 10.1007/s11467-013-0338-4.
- H.- K. Choi, H. K. Shon, H. Yu, T. G. Lee\*, and Zee Hwan Kim\*, “The  $b_2$ -Peaks in SERS Spectra of 4-Aminobenzenethiol: a Photochemical Artifact or a Real Chemical Enhancement?” *J. Phys. Chem. Lett.* **4**, 1079–1086 (2013).
- S.- H. Ahn, D.- S. Kim, D. Seo, W. Choi, G.- R. Yi, H. Song, Q.- H. Park, and Z. H. Kim\* “Localized plasmon resonances of bimetallic AgAuAg nanorods”, *Phys. Chem. Chem. Phys.* **15**, 4190-4194 (2013).
- D. S. Kim and Z. H. Kim\*, “Role of in-plane polarizability of the tip in scattering near-field microscopy of a plasmonic nanoparticle”, *Opt. Express*, 20(8), 8689-8699 (2012).
- C. G. Park, J.- Y. Kim, E. Kim, W.- H. Park and Z. H. Kim, *BKCS* (2012).
- N. K. Lee, S. Park, M.- H. Yoon, Z. H. Kim, S. K. Kim\* “Effect of ring torsion on intramolecular vibrational redistribution dynamics of 1,1'-binaphthyl and 2,2'-binaphthyl” *Phys. Chem. Chem. Phys.* **14**, 840–848 (2012).
- H. S. Jung, J. H. Han, Z. H. Kim, C. Kang, J. S. Kim\* “Coumarin-Cu(II) Ensemble-Based Cyanide Sensing Chemodosimeter” *Org. Lett.* **13**, 5056 (2011).
- W.- H. Park and Z. H. Kim\*, "Charge Transfer Enhancement in the SERS of a Single Molecule", *Nano Lett.* **10**, 4040-4048 (2010).
- D. S. Kim, J. Heo, S.- H. Ahn, S. W. Han, W. S. Yun, and Z. H. Kim\*, “Real-Space Mapping of the Strongly Coupled Plasmons of Nanoparticle Dimers”, *Nano Lett.* **9**(10) 3619 (2009).

- H. Rhee, Y.-G. June, J.-S. Lee, K.-K. Lee, J.-H. Ha, Z. H. Kim, S.-J. Jeon, M. Cho\*, “Femtosecond characterization of vibrational optical activity of chiral molecules”, *Nature*, 458, 310 (2009).
- Y. W. Lee, M. Kim, Z. H. Kim, S. W. Han\*, “One-Step Synthesis of Au@Pd Core-Shell Nanooctahedron “ *J. Am. Chem. Soc.* 131, 17036 (2009).
- H. Rhee, Y. G. June, Z. H. Kim, S. J. Jeon, M. Cho\* “Phase sensitive detection of vibrational optical activity free-induction-decay: vibrational CD and ORD” *J. Opt. Soc. Am. B* 26, 1008 (2009).
- T. Kim, D. S. Kim, B. Y. Lee, Z. H. Kim, S. Hong\*, "Nanoprism" Probe for Nano-optical Applications “ *Adv. Mater.* 21, 1238, (2009).
- K. H. Jung, S. Y. Bae, K. H. Kim, M. J. Cho, K. Lee, Z. H. Kim, D. H. Choi\*, D. H. Lee, mD. S. Chung, C. E. Park, “High-mobility anthracene-based X-shaped conjugated molecules for thin film transistors” *ChemComm.* 35, 5290 (2009).
- K. G. Lee, K. J. Ahn, H. W. Kihm, J. S. Ahn, T. K. Kim, S. Hong, Z. H. Kim, D. S. Kim\*, “Surface plasmon polariton detection discriminating the polarization reversal image dipole effects” *Opt. Express* 16, 10641 (2008).
- W.- H. Park, S.- H. Ahn, and Z. H. Kim\*, “Surface-enhanced Raman scattering from a single nanoparticle-plane junction”, *ChemPhysChem* 9, 2491-2494 (2008).
- J. E. Yang, W. H. Park, C. J. Kim, Z. H. Kim\*, M. J. Jo\* “Axially graded heteroepitaxy and Raman spectroscopic characterizations of Si<sub>1-x</sub>Ge<sub>x</sub> nanowires” *Appl. Phys. Lett.* 92, 263111 (2008).
- D. S. Kim, Z. H. Kim\* “Polarization-selective imaging of the enhanced local field at gold nanoparticle junctions” *JKPS*, 52, 17 (2008).
- J. Heo, D. S. Kim, Z. H. Kim\*, Y. W. Lee, D. Kim M. Kim, K. Kwon, H. J. Park, W. S. Yun\*, S. W. Han\* “Controlled synthesis and characterization of the enhanced local field of octahedral Au nanocrystals” *ChemComm* 46, 6120 (2008).
- W. H. Park, Z. H. Kim\*, “High-resolution fluorescence near-field imaging of individual nanoparticles via the tip-induced quenching technique” *BKCS*, 28, 2195 (2007).
- S. H. Ahn, W. H. Park, Z. H. Kim\*, “Nano-optical investigation of enhanced field at gold nanosphere-gold plane junctions” *BKCS*, 28, 2200 (2007).
- H. M. Kim, H. Y. Han, J. Park, S. K. Kim\*, Z. H. Kim, “Conformational study of jet-cooled L-phenylglycine “ *J. Chem. Phys.* 128, 184313 (2008).
- Z. H. Kim, S. R. Leone “Polarization-selective mapping of near-field intensity and phase around gold nanoparticles using apertureless near-field microscopy” *Opt. Express* 16, 1733 (2008).
- G. W. Kim, M. J. Cho, Y.- J. Yu, Z. H. Kim, J.- I. Jin, D. Y. Kim, D. H. Choi\*, “Red Emitting Phnothiazine Dendrimers Encapsulated 2-{2-[2-(4-Dimethylaminophenyl)vinyl]-6-methylpyran-4-ylidene}malononitrile Derivatives” *Chem. Mater.* 19, 42 (2007).
- C.- J. Kim, J.- E Yang, H.- S. Lee, H. M. Jang, M.- H Jo\*, W.- H. Park, Z. H. Kim, S. Maeng “Fabrication of Si<sub>1-x</sub>Ge<sub>x</sub> allow nanowire field-effect transistors” *Appl. Phys. Lett.* 91, 033104 (2007).
- Z. H. Kim, S.- H. Ahn, B. Liu and S. R. Leone, “Nanometer-Scale Dielectric Imaging of Semiconductor Nanoparticles: Size-Dependent Dipolar Coupling and Contrast Reversal” *Nano Lett.* 7, 2258 (2007).
- K. S. Jeong, Y. S. Kim, Y. J. Kim, E. Lee, J. H. Yoon, W. H. Park, Y. W. Park, S.- J Jeon, Z. H. Kim, J. Kim, N. Kim\* “Lanthanitin: A Chiral Nanoball Encapsulating 18 Lanthanum Ions by Ferritin-Like Assembly” *Angew. Chem. Int. Ed.* 45, 8134 (2006).

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