Hajin Kim

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Current Position Assistant professor, School of Nano-Bioscience and Chemical Engineering, UNIST

Education

Seoul National University, Seoul, Korea
Ph.D. Physics (Young Kuk group) Feb 2006
"One-Dimensional Heterogeneous Electronic Structure of Carbon Nanotubes: Bandgap Modulation, Defect States, and Luttinger Liquid Behavior"
M.S. Physics (Young Kuk group) Feb 2001
"A Study of Bromobenzene Molecules Adsorbed on the Cu(111) Surface with a Low Temperature Scanning Tunneling Microscope"
B.S. Physics Feb 1999
Seoul Science High School, Seoul, Korea 1992 – 1995

Professional Experience

Research Associate at **Howard Hughes Medical Institute** (**Taekjip Ha** group) Nov 2009 – Dec 2013
Postdoctoral Research Associate at the **University of Illinois, Urbana-Champaign** (**Taekjip Ha** group) May 2009 – Nov 2009
Postdoctoral Scholar at **University of California, Berkeley** and **Stanford University** (**Steven Chu** group) Dec 2006 – May 2009

Current Research Topics

Single molecule ribosome assembly (Sarah Woodson group at JHU)
Mitochondrial transcription initiation (Smita Patel group at UMDNJ)
Intrinsically disordered proteins – IκBα/NF-κB (Elizabeth Komives group at UCSD)
Dynamics of L7/L12 ribosomal protein (Steven Chu)

Publications

***Hajin Kim**, *Sanjaya Abeysirigunawardena, Kaushik Ragunathan, Megan Mayerle, Ke Chen, Zaida Luthey-Schulten, Taekjip Ha, and Sarah Woodson
"Protein-Guided RNA Dynamics during Early Ribosome Assembly"
Nature (2014)

∗Jorge A. Lamboy, ∗**Hajin Kim**, Holly Dembinski, Taekjip Ha, and Elizabeth Komives,
"Single molecule FRET reveals the energy landscape of the native state dynamics of the IκBα ankyrin repeat domain"
J. Mol. Biol. (2013)

Hajin Kim and Taekjip Ha,
"Single Molecule Nanometry for Biological Physics"
Reports on Progress in Physics (2013)

Ibrahim Cisse, **Hajin Kim**, and Taekjip Ha,

"A Rule of Seven in Watson-Crick Base Pairing of Mismatched Sequences"
Nature Struct. Mol. Biol. (2012)

Ke Chen, John Eargle, Jonathan Lai, **Hajin Kim**, Taekjip Ha, Megan Mayerle, Sarah Woodson, and Zaida Luthey-Schulten,
"Assembly of the Five-way Junction in the Ribosomal Small Subunit Using Hybrid MD-Go Simulations"
Journal of Physical Chemistry B (2012)

Hajin Kim, Guo-Qing Tang, Smita S. Patel, and Taekjip Ha,
"Opening-Closing Dynamics of the Mitochondrial Transcription Pre-initiation Complex"
Nucleic Acids Research (2011) (*featured article*)

∗Jorge A. Lamboy, ∗**Hajin Kim**, Kyung Suk Lee, Taekjip Ha, and Elizabeth A. Komives,
"Visualization of the Nanospring Dynamics of the IκBα Ankyrin Repeat Domain in Real Time"
Proc. Natl. Acad. Sci. 108 (2011) (∗ equal contribution)

Helen Hwang, **Hajin Kim**, and Sua Myong,
"Protein Induced Fluorescence Enhancement as a Single Molecule Assay with Short Distance Sensitivity"
Proc. Natl. Acad. Sci. 108, 7414-7418 (2011)

Byoung-Young Choi, S.-J. Kahng, S. Kim, **H. Kim**, H. W. Kim, Y. J. Song, J. Ihm, and Y. Kuk,
"Conformational Molecular Switch of the Azobenzene Molecule: A Scanning Tunneling Microscopy Study"
Phys. Rev. Lett. 96, 156106 (2006)

Sungjun Lee, G. Kim, **H. Kim**, B.-Y. Choi, J. Lee, B. W. Jeong, J. Ihm, Y. Kuk, and S.-J. Kahng,
"Paired Gap States in a Semiconducting Carbon Nanotube: Deep and Shallow Levels"
Phys. Rev. Lett. 95, 166402 (2005)

Hajin Kim, J. Lee, S. J. Lee, J.-Y. Park, S.-J. Kahng, and Y. Kuk,
"Local Electronic Density of States of a Semiconducting Carbon Nanotube Interface"
Phys. Rev. B 71, 235402 (2005)

Hajin Kim, J, Lee, S. Lee, Y. J. Song, B.-Y. Choi, Y. Kuk, and S.-J. Kahng,
"Scanning Tunneling Spectroscopy of a Semiconducting Heterojunction Nanotube on the Au(111) Surface"
Surf. Sci. 581, 241 (2005)

Jhinhwan Lee, S. Eggert, **H. Kim**, S.-J. Kahng, H. Shinohara, and Y. Kuk,
"Real Space Imaging of One-Dimensional Standing Waves: Direct Evidence for a Luttinger Liquid"
Phys. Rev. Lett. 93, 166403 (2004)

Hajin Kim, J. Lee, Y. J. Song, B. Y. Choi, S.-J. Kahng, and Y. Kuk,
"Nano-Scale Structures of a One-Dimensional Junction"
Thin Solid Films 464, 335 (2004)

Hajin Kim, H. J. Chung, J. Lee, S. J. Lee, B.-Y. Choi, Y. J. Song, and Y. Kuk,
"Functionalized One-Dimensional Wires and Their Interconnections"
Jpn. J. Appl. Phys. 42, 4780 (2003)

Hajin Kim, J. Lee, S.-J. Kahng, Y.-W. Son, S. B. Lee, C.-K. Lee, J. Ihm, and Y. Kuk,
"Direct Observation of Localized Defect States in Semiconductor Nanotube Junctions"
Phys. Rev. Lett. 90, 216107 (2003)

Hajin Kim, H. J. Chung, J. Lee, and Y. Kuk,
"Functionalized One-Dimensional Devices and Their Interconnections"
J. of Kor. Phys. Soc., 42, S134 (2003)

Jhinhwan Lee, **H. Kim**, S.-J. Kahng, G. Kim, Y.-W. Son, J. Ihm, H. Kato, Z. W. Wang, T. Okazaki, H. Shinohara, and Y. Kuk,
"Bandgap Modulation of Carbon Nanotubes by Encapsulated Metallofullerenes"
Nature 415, 1005 (2002)

Total Citations: 905

Presentations

"Role of Fluctuations in Transcription Initiation and Ribosome Assembly"
Seminar at Oregon State University, Feb 2013, Corvalis

"Dynamics of the Mitochondrial Transcription Pre-Initiation Complex"
EMBO/EMBL Symposium: "The Complex Life of mRNA", Oct 2012, Heidelberg

"Protein-Guided RNA Dynamics during Early Ribosome Assembly"
CPLC Symposium, Sep 2012, UIUC

"Visualizing Induced Fit during the Early Stage of Ribosome Assembly"
Gordon Research Conference (Single Molecule Approaches to Biology), July 2012, West Dover

"Single Molecule Views of Ribosome Assembly"
56th Biophysical Society Meeting, Mar 2012, San Diego

"Role of Fluctuations in Gene Expression and Regulation"
Seminar at Samsung Advanced Institute of Technology, Feb 2012, Yongin

"Role of Fluctuations in Biology"
Seminar at KIAS and Yonsei University (Nano-Medical NCRC), Sep 2011, Seoul

"Ribosome Assembly in Single Molecule"
RNA Group Seminar, Aug 2011, UIUC

"Opening-Closing Dynamics of Transcription Initiation Complex"
55th Biophysical Society Meeting, Mar 2011, Baltimore

"Promoter Opening-Closing Dynamics by Mitochondrial RNA Polymerase"
24th Gibbs Conference on Biothermodynamics, Sep 2010, Carbondale

"IkBa Fluctuation Explored by Single Molecule FRET"
Mid-West Single-Molecule Workshop, Jul 2010, Washington University

"GTPase Activation by the Ribosome and the Dynamics of L7/L12"
UIUC Seminar (CPLC), Feb 2009, Urbana-Champaign

"Single Porphyrin Molecules as Information Storage Elements"
52th American Vacuum Society Meeting, Nov 2005, Boston

"Luttinger Liquid Behavior of Metallic Carbon Nanotubes Observed in Real Space"
13th International Conference on STM/STS and Related Techniques (STM'05), Jul 2005, Sapporo

"Real Space Imaging of One-Dimensional Standing Waves: Direct Evidence of a Luttinger Liquid"
Gordon Research Conference on Condensed Matter Physics, Jun 2005, Connecticut College

"Direct Observation of Localized Defect States in Semiconductor Nanotube Junctions"
24th Korean Vacuum Society Meeting, Feb 2003, Hanyang University, Korea

"Electronic Structure of Carbon Nanotube Intramolecular Junctions"
Nanotube 2002 Conference, Jul 2002, Boston College

"Electronic States at the Junctions of Single Wall Carbon Nanotubes"
21st European Conference on Surface Science/Nano-7, Jun 2002, Malmö, Sweden

"Local Bandgap Modulation of Carbon Nanotubes by Encapsulated Metallofullerenes"
Korean Physical Society Meeting, Oct 2001, Chonnam University, Korea

Honors and Awards Fellowship for Postdoctoral Research (2007) - Korean Research Foundation