CURRICULUM VITAE

HUGH I. KIM

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EDUCATION

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, California
Ph.D. Physical Chemistry defended May 2008
Thesis: "Fundamental and applied studies of the structures and reaction dynamics of biomolecules using mass spectrometry and ion mobility spectrometry"

UNIVERSITY OF CALIFORNIA AT BERKELEY, Berkeley, California
B. S. Chemistry graduated May 2003

PROFESSIONAL EXPERIENCE

JET PROPULSION LABORATORY, SCIENCE DIVISION (2003 – Present)

Caltech Postdoctoral Scholar, Jet Propulsion Laboratory
Luther Beegle, Group Supervisor Oct. 2008 – Present
· Experimental and theoretical studies of ion mobilities of lipid biomarkers relevant to structures and non-covalent interactions.
· Developing and Investigation of field induced droplet ionization mass spectrometry (FIDI-MS) for in situ detection of organic molecules.

Caltech Graduate Research Affiliate
Isik Kanik, Section Manager Jun. 2004 – May 2008
· Experimental and theoretical studies of ion mobilities of biomolecules relevant to gas phase structures and non-covalent interactions (two papers published).
· Development of electrospray ionization ion mobility spectrometry instrumentation for *in situ* detection and analysis of organic compounds on planetary bodies (one review paper published).

California State University at Fullerton, Research Affiliate
Isik Kanik, Group Supervisor Jun. 2003 – May 2004
· Investigation of the correlation between mass and mobility of organic molecules using electrospray ionization ion mobility spectrometry instrumentation for *in situ* detection and analysis of organic compounds on planetary bodies (one paper published).

CALIFORNIA INSTITUTE OF TECHNOLOGY, CHEMISTRY DEPARTMENT (2004 – 2008)

Postdoctoral Scholar, Caltech, Chemistry Department
J. L. Beauchamp, Advisor Jun. 2008 – Sep. 2008
· Investigation of liquid surface chemical physics of surfactant lipids and proteins using field induced droplet ionization mass spectrometry (FIDI-MS).
· Developing micro-fluidic device for the in vitro air-liquid interface study for lung avelolar system.

Graduate Researcher
J. L. Beauchamp, Advisor Jun. 2004 – May.2008
· Identification of post translational modified (PTM) residues from non-covalently bound metal complexes of peptides using mass spectrometric technique: Locating disulfide linkages in peptides and proteins (two papers published).
· Cluster phase chemistry of organic molecules relevant to atmospheric aerosols: Decarboxylation of sodium complexes of carboxylate anions triggered by single water molecule (two papers published).

AWARDS AND HONORS

2003 – 2008	Jet Propulsion Laboratory Research Sub-Fellowship
2007	Korea Science and Engineering Foundation (KOSEF)/Korea-U.S. Science Cooperation Center (KUSOCO) Scholarship
2002	Jet Propulsion Laboratory, California Institute of Technology, Summer Undergraduate Research Fellowship
2002	University of California, Berkeley, College of Chemistry Scholarship
2002	Golden key International Honor Society
2001 – 2002	University of California, Berkeley Scholarship
2001	El Camino College, Division of Mathematical Science Awards (Chemistry, General Chemistry, Mathematics)

RESEARCH PUBLICATIONS

1. **Kim, H. I.**; Beauchamp, J. L. "The Route 66 Method for Locating Disulfide Bonds in Peptides: Selective Cleavages of S-C Bonds Initiated with an Alkalie and Alkaline Earth Metal Enolate Complexes at Cysteine," *J. Am. Soc. Mass. Spec.*, Cover article of JASMS Jan. issue, 2009, in press.

2. Kim, H*****; **Kim, H. I.***; Beegle, L. W.; Johnson, P. V.; Beauchamp, J. L.; Goddard, W. A.; Kanik, I., "An Experimental and Theoretical Investigation into the Correlation between Mass and Ion Mobility for Choline and Other Ammonium Cations in N_2," *Anal. Chem*., 2008, 80 (6): 1928-1936.***AUTHORS WITH EQUAL CONTRIBUTION.**

3. **Kim, H. I**.; Beauchamp, J. L., "Identifying the Presence of a Disulfide Linkage in Peptides by the Selective Elimination of Hydrogen Disulfide from Collisionally Activated Alkali and Alkaline Earth Metal Complexes," *J. Am. Chem. Soc*., 2008, 130 (4): 1245 -1257

4. **Kim, H. I.**; Beauchamp, J. L., "Cluster Phase Chemistry: Collisions of Vibrationally Excited Cationic Dicarboxylic Acid Clusters with Water Molecules Initiate Dissociation of Cluster Components," *J. Phys. Chem. A*, 2007, 111 (27): 5954-5967

5. Johnson, P.V.; Beegle, L.W.; **Kim, H. I.**; Eiceman, G. A.; Kanik, I, "Ion Mobility Spectrometry in Space Exploration; A Review Article," *Int. J. Mass. Spectrom*., 2006, 262: 1-15

6. **Kim, H. I.**; Goddard, W. A.; Beauchamp, J. L., "Cluster Phase Chemistry: Anionic Sodium Salts of Dicarboxylic Acid Clusters with Water Molecules,"*J. Phys. Chem. A*, 2006, 110 (25):7777-7786

7. **Kim, H. I.**; Johnson, P. V.; Beegle, L. W.; Beauchamp, J. L.; Kanik, I., "Electrospray ionization ion mobility spectrometry of carboxylate anions: Ion mobilities and a mass-mobility correlation," *J. Phys. Chem. A*, 2005, 109 (35): 7888-7895

8. Johnson, P. V.; **Kim, H. I.**; Beegle L. W.; Kanik I., "Electrospray ionization ion mobility spectrometry of amino acids: Ion mobilities and a mass-mobility correlation," *J. Phys. Chem. A*, 2004, 108 (27): 5785-5792

PRESENTATIONS

1. ***Kim H. I.**; Beegle, L. W.; Beauchamp, J. L., "Probing Interfacial Chemistry of Phospholipid Monolayers Using Field Induced Droplet Ionization Mass Spectrometry," poster at Sanibal Conference on Mass Spectrometry, Lipidomics and Lipids in Mass Spectrometry, 2009, St. Petersburg Beach, Florida`

2. ***Kim H. I**.; Beauchamp, J. L., "The Route 66 Method for Locating Disulfide Bonds in Peptides," oral at Lake Arrowhead Ion Chemistry Conference, 2008, Lake Arrowhead, California
3. *Kim, K.; **Kim, H. I**.; Neidholdt, E. L.; Beauchamp, J. L., "Exploration of New Pathways to Ion Extraction from Liquid Droplets: Resonant Excitation of suspended Droplets using AC Electric Fields," poster at Lake Arrowhead Ion Chemistry Conference, 2008, Lake Arrowhead, California

4. *__Kim, H. I__.; Beauchamp, J. L., “Chloride Adducts of Dicarboxylic Acids and Monohydrated Chloride Adducts of Small Peptides with Multiple Carboxyl Groups,” oral at Lake Arrowhead Ion Chemistry Conference, 2007, Lake Arrowhead, California

5. *__Kim, H. I__.; Johnson, P. V.; Beegle, L. W.; Beauchamp, J. L.; Kanik, I., “Probing Ionic Structure using Eletrospray Ionization/Ion Mobility Spectrometry,” oral at 15th International Conference on Ion Mobility Spectrometry, 2006, Honolulu, Hawai’i

6. Kim, H.; __Kim, H. I__.; Beegle, L. W.; *Johnson P. V.; Beauchamp, J. L.; Kanik. I., “Theoretical Ion Mobility Studies of Amino Acids,” abstract #2127 and poster at 37th Lunar and Planetary Science Conference, Lunar and Planetary Institute, 2006, Houston, Texas

7. *__Kim H. I__.; Goddard, W, A.; Beauchamp, J. L., “Cluster Phase Chemistry: Collisions of Vibrationally Excited Anionic Clusters with Water Molecules can Trigger Dissociation of Cluster Components,” poster at Lake Arrowhead Ion Chemistry Conference, 2006, Lake Arrowhead, California

8. __Kim, H. I__.; Johnson, P. V.; *Beegle, L. W.; Kanik, I., “The Effect of Salts on Electrospray Ionization of Amino Acids in The Negative Mode,” abstract # 1784 and poster at 35th Lunar and Planetary Science Conference, Lunar and Planetary Institute, 2004, Houston, Texas

9. *Beegle, L. W.; Terrell, C. A.; __Kim, H. I__.; Kanik, I., “High-Resolution Electrospray Ionization/Ion Mobility Spectroscopy for Detection of Abiotic Amino Acids,” abstract # 1295 and poster at 34th Lunar and Planetary Science Conference, Lunar and Planetary Institute, 2003, Houston, Texas

* Presenting Author