EUNSUNG LEE

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RESEARCH INTERESTS

Synthesis and application of inorganic/organometallic complexes and reactive organic compounds, which 1) allow facile access to ^{18}F-labeled PET tracers, from small molecules to supramolecules, in order to study neurosystems and the brain, 2) catalyze small molecules highly efficiently, and 3) show regioselective organic transformations in metal-organic frameworks (MOFs).

EDUCATION

2004 – 2009 **Stanford University**, Stanford, CA, USA
Ph.D. *Inorganic and Organometallic Chemistry*
Advisor: Prof. Dmitry V. Yandulov

1999 – 2001 **POSTECH**, Pohang, Republic of Korea
M.S. *Inorganic Chemistry*
Advisor: Prof. Kimoon Kim

1995 – 1999 **POSTECH**, Pohang, Republic of Korea
B.S. *Inorganic Chemistry*
Advisor: Prof. Kimoon Kim

EXPERIENCE

2017 – current **POSTECH**, Department of Chemistry
Associate Professor
Institute for Basic Science (IBS) Center for Self-assembly and Complexity (POSTECH Campus)
Research Fellow

2013 – 2017 **Institute for Basic Science (IBS)** Center for Self-assembly and Complexity (POSTECH Campus)
Research Fellow
POSTECH, Department of Chemistry
Assistant Professor

2009 – 2013 **Harvard University**, Department of Chemistry and Chemical Biology
MGH (Massachusetts General Hospital), Department of Radiology,
Postdoctoral Scholar
Advisor: Prof. Tobias Ritter

2004 – 2009 **Stanford University**, Department of Chemistry
Teaching/Research Assistant

2004 **Soongsil University**, CAMDRC and Department of Chemistry
Researcher
Advisor: Prof. Jaheon Kim

2001 **POSTECH**, Center for Smart Supramolecules (CSS)
Researcher
Advisor: Prof. Kimoon Kim

AWARDS

2000	**POSTECH**, Center for Smart Supramolecules: Excellent Research Award
2015	TJ Park Science Fellowship
2015	IBS Excellent Researcher Award
2016	2016 Thieme Chemistry Journal Award

PUBLICATIONS

(37) ***Synthetic control of coincidental formation of N-heterocyclic carbene copper(I) complex and imidazolium cations within metal-organic frameworks***
CrystEngComm. **2017**, *19*, 1528.
H.-J. Lee, H. Kwon, J. Sim, D. Song, Y. Kim, J. Kim,* K. Kim,* E. Lee.*

(36) ***On the Mechanism of Oxidative Cleavage of N-heterocyclic Carbene (NHC) Palladium Bond with Iodine***
Eur. J. Inorg. Chem. **2017**, *accepted*.
E. Lee.*, D. Y. Bae, D. V. Yandulov

(35) ***An N-heterocyclic Carbene TCNE Zwitterion: Experimental and Theoretical Study on its Formation and Reactivity***
Eur. J. Org. Chem. **2017**, 1231.
H. Song, Y. Kim, J. Park, Y. H. Ko, K. Kim, E. Lee.*

(34) ***A Highly Substitutable Palladium(II) Complex Stabilized by the Smallest Steric N-heterocyclic Carbene, IMe (IMe = 1,3-Dimethylimidazole-2-ylidene)***
Bull. Korean Chem. Soc., **2016**, *37*, 1547.
E. Lee.*, D. Y. Bae, D. V. Yandulov

(33) ***A Palladium(II) Peroxide Complex Supported by the Smallest Steric N-Heterocyclic Carbene, IMe (IMe = 1,3-Dimetylimidazole-2-ylidene), and Its Reactivity by Oxygen Atom Transfer***
Eur. J. Inorg. Chem. **2016**, 4551.
E. Lee.*, D. Y. Bae, S. Park, A. G. Oliver, Y. Kim, D. V. Yandulov

(32) ***Activation of C–F Bonds in Fluoroarenes by N-Heterocyclic Carbenes as an Effective Route to Abnormal NHC Complexes***
Chem. Commun. **2016**, *52*, 10922.
Y. Kim, E. Lee.*

(31) ***Efficient Synthesis of Bulky N-Heterocyclic Carbene Ligands for Coinage Metal Complexes***
J. Organomet. Chem. **2016**, *820*, 1.
Y. Kim, Y. Kim, M. Y. Hur, E. Lee.*

(30) ***Theoretical Study on Electronic Properties of Deoxyfluorinating Sulfur-Based Reagents***
J. Radiopharm. Mol. Probes. **2016**, *2*, 51. *(Korean).*
S. Lim, E. Lee.*

(29) ***Activation of Small Molecules at N-Heterocyclic Carbene Centers***
Synlett **2016**, *27*, 477.
H. Song, Y. Kim, J. Park, K. Kim, E. Lee.*

(28) ***Recent advances of aromatic C–F bond borylation and Its application to positron emission tomography***
J. Radiopharm. Mol. Probes. **2015**, *1*, 80. *(Korean).*
D. Song, S. Lee, B. C. Lee, S. E. Kim, E. Lee.*

(27) ***Hydrolytic Transformation of Microporous Metal–Organic Frameworks to Hierarchical Micro- and Mesoporous MOFs***
Angew. Chem. Int. Ed. **2015**, *54*, 13273.
Y. Kim, T. Yang, G. Yoon, M. B. Ghasemian, J. Koo, E. Lee, S. J. Cho, K. Kim*

(26) ***Porphyrin Boxes: Rationally Designed Porous Organic Cages***

Angew. Chem. Int. Ed. **2015**, *54*, 13241.
S. Hong, M. R. Rohman, J. Jia, Y. Kim, D. Moon, Y. Kim, Y. H. Ko, E. Lee, K. Kim*

(25) ***Designing Highly Active Metal-Free Oxygen Reduction Catalyst inMembrane Electrode Assemblies for Alkaline Fuel Cells: Effects of Pore Size and Doping-Site Position***
Angew. Chem. Int. Ed. **2015**, *54*, 9230.
S. Lee, M. Choun, Y. Ye, J. Lee, Y. Mun, E. Kang, J. Hwang, Y.-H. Lee, C.-H. Shin, S.-H. Moon, S.-K. Kim, E. Lee, J. Lee*

(24) ***N-Heterocyclic Carbene Nitric Oxide Radicals***
J. Am. Chem. Soc. **2015**, *137*, 4642.
J. Park, H. Song, Y. Kim, B. Eun, Y. Kim, D. Y. Bae, S. Park, Y. M. Rhee, W. J. Kim, K. Kim, E. Lee.*

(23) ***Mechanism of electrophilic fluorination with Pd(IV): fluoride capture and subsequent oxidative fluoride transfer***
Chem. Sci., **2014**, *5*, 169.
J. R. Brandt, E. Lee, G. B. Boursalian, T. Ritter.*

(22) ***Application of Palladium-Mediated 18F-Fluorination to PET Radiotracer Development: Overcoming Hurdles to Translation***
PLoS One **2013**, *8*, e59187.
A. Kamlet, C. Neumann, E. Lee, S. Carlin, C. Moseley, N. Stephenson, J. M. Hooker,* T. Ritter.*

(21) ***Nickel-Mediated Oxidative Fluorination for PET with Aqueous [^{18}F]Fluoride***
J. Am. Chem. Soc. **2012**, *134*, 17456. *Highlight* (*C&EN* **2012**, *90* (43), 34.) Synfacts 2013; 9(1): 0090
E. Lee, J. M. Hooker, T. Ritter.*

(20) ***Connecting Binuclear Pd(III) and Mononuclear Pd(IV) Chemistry by Pd–Pd Bond Cleavage***
J. Am. Chem. Soc. **2012**, *134*, 12002.
D. C. Powers, E. Lee, A. Ariafard, M. S. Sanford, B. F. Yates,* A. J. Canty,* T. Ritter.*

(19) ***Synthesis and Characterization of Pd(IMe)$_2$, and its Reactivity by C-S Oxidative Addition of DMSO***
J. Organomet. Chem., **2011**, *696*, 4095.
E. Lee,* D. V. Yandulov.

(18) ***Synthesis and Structure of Solution-Stable One-Dimensional Palladium Molecular Wires***
Nature Chem., **2011**, *3*, 949.
M. G. Campbell, D. C. Powers, J. Raynaud, M. J. Graham, P. Xie, E. Lee, T. Ritter.*

(17) ***A Fluoride-derived Electrophilic Late-Stage Fluorination Reagent for PET Imaging***
Science **2011**, *334*, 639. *Highlights* (*C&EN* **2011**, *89* (45), 7. *Nat. Methods* **2012**, *9*, 19. *Angew. Chem. Int. Ed.* **2012**, *51*, 1106. *Nature Chem.* **2012**, *4*, 152)
E. Lee,‡ A. Kamlet,‡ D. C. Powers, C. Neumann, G. B. Boursalian, T. Furuya, D. C. Choi, J. M. Hooker,* T. Ritter.*

(16) ***Silver-Mediated Trifluoromethoxylation of Aryl Stannanes and Arylboronic Acids***
J. Am. Chem. Soc. **2011**, *133*, 13308.
C. Huang, T. Liang, S. Harada, E. Lee, T. Ritter.*

(15) *A* ***Dinuclear Palladium Catalyst for α-Hydroxylation of Carbonyls with O$_2$***
J. Am. Chem. Soc. **2011**, *133*, 1760.
G. J. Chuang, W. Wang, E. Lee, T. Ritter.*

(14) ***On the Isolation of Neat Allylic Fluorides***
J. Fluor. Chem. **2009**, *130*, 474.
E. Lee, D. V. Yandulov.*

(13) ***Crystal structures of (2-substituted-5-N-tosyl)bicyclo[3.3.0]-5-azacyclooct-2-enone: a pseudo achiral crystal from enantiopure compound and a counter-example of Wallach's rule***
Tetrahedron: Asymmetry **2009**, *20*, 1736.
K. S. Jeong, D. E. Kim, E. Lee, Y. H. Jhon, H. Han, J. Kim, N. Jeong.*

(12) ***A Three-dimensional MOF Assembled by Metal-organic Tapes Comprising of Copper(II) Tetranuclear Clusters and 5-Sulfoisophthalates***
Bull. Kor. Chem. Soc. **2008**, *29*, 2540.
H. R. Jeon, D. W. Min, Y. Oh, E. Lee, Y.-J. Kim, D.-Y. Jung, J. Kim.*

(11) ***Lanthanitin: A chiral nanoball encapsulating 18 lanthanum ions by ferritin-like assembly***
Angew. Chem. Int. Ed. **2006**, *45*, 8134.
K. S. Jeong, Y. S. Kim, Y. J. Kim, E. Lee, J. H. Yoon, W. H. Park, Y. W. Park, S.-J. Jeon, Z. W. Kim, J. Kim, N. Jeong.*

(10) ***Complexation of Ferrocene Derivatives by the Cucurbit[7]uril Host: A Comparative Study of the Cucurbituril and Cyclodextrin Host Families***
J. Am. Chem. Soc. **2005**, *127*, 12984.
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(9) ***A Double-chained Polyrotaxane: Cucurbituril 'Beads' Threaded onto a Double-chained One-dimensional Coordination Polymer***
Bull. Kor. Chem. Soc. **2004**, 1711.
K. –M. Park, E. Lee, S. –C. Roh, J. Kim, K. Kim.*

(8) ***Hydrogen adsorption experiments with IRMOF-3 as a sorbent, and the molecular modeling studies on the functionalized MOFs***
Transactions of the Korean Hydrogen and New Energy Society, **2004**, 15, 105 (Korean).
E. Lee, Y. Oh, J. Kim,* J. Yoon, T.-B. Lee, S.-H. Choi, D. Kim, J. Lee, S. J. Cho

(7) ***Construction of a Square-wave-shaped One-dimensional Polyrotaxane Using a Preorganized L-shaped Pseudorotaxane***
Supramol. Chem. **2002**, 14, 153.
K. –M. Park, S. –C. Roh, E. Lee, J. Kim, J. W. Lee, H. –J. Kim, K. Kim.*

(6) ***Transition Metal Ion-Directed Supramolecular Assembly of One- and Two-dimensional Polyrotaxanes Incorporating Cucurbituril***
Chem. Eur. J. **2002**, *8*, 498.
K. –M. Park, D. Whang, E. Lee, J. Heo, K. Kim.*

(5) ***Macrocycle in Macrocycle: Encapsulation of Metal Cyclen Complex in Cucurbit[8]uril***
Angew. Chem. Int. Ed. **2001**, *40*, 2119.
S. -Y. Kim, I. –S. Jung, E. Lee, J. Kim, S. Sakamoto, K. Yamaguchi, K Kim.

(4) ***Selective Inclusion of a Hetero-Guest Pair in a Molecular Host***
Angew. Chem. Int. Ed. **2001**, *40*, 1526.
H. -J. Kim, J. Heo, W. –S. Jeon, E. Lee, J. Kim, S. Sakamoto, K. Yamaguchi, K. Kim.*

(3) ***A Two-Dimensional Polyrotaxane with Large Cavities and Channels: a Novel Approach to Metal-Organic Open-Frameworks Using Supramolecular Building Blocks***
Angew. Chem. Int. Ed. **2001**, *40*, 399.
E. Lee, J. Kim, J. Heo, D. Whang, K. Kim.*

(2) ***A Three-Dimensional Polyrotaxane Network***
Angew. Chem. Int. Ed. **2000**, *39*, 2699.
E. Lee, J. Heo, K. Kim.*

(1) ***New Cucurbituril Homologues: Syntheses, Isolation, Characterization, and X-ray Crystal Structures of Cucurbit[n]uril (n = 5, 7, and 8)***
J. Am. Chem. Soc. **2000**, *122*, 540.
J. Kim, I.-S. Jung, S.-Y. Kim, E. Lee, J.-K. Kang, S. Sakamoto, K. Yamaguchi, K. Kim*

PATENT

K. Kim, J. Kim, I. –S. Jung, S. –Y. Kim, E. Lee, J. –K. Kang, Japan Patent No. 3,432,483; Europe Patent No.1,094,065; US Patent

No. 6,365,734, "*Cucurbituril Derivatives, their preparation methods and uses*".

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H. Song, S. Jeon, K. Kim, E. Lee, "*N*-Heterocyclic carbene metallocene compounds and application of the same" PLA0120120282-4

S. Park, H. Song, K. Kim, E. Lee, "Fluorosulfonyl Carboxylic Acid Compound and Uses Thereof" PLA0120120282-6

H. Kwon, K. Kim, E. Lee, "Transition metal complexes and their preparation" PLA0120120282-5