Curriculum Vitae

Kyalo Stephen Kanyiva, Ph.D.

Graduate School of Pharmaceutical Sciences
The University of Tokyo
7-3-1 Hongo, Bunkyo-ku
Tokyo 113-0033, Japan

E-mail: kanyiva@mol.f.u-tokyo.ac.jp
Tel: (+81)-3-5841-5019
Fax: (+81)-3-5684-5206

Current Position: ERATO researcher with Prof. Motomu Kanai, The University of Tokyo

Research Interests: Design and development of new and efficient organic reactions using transition metal catalysts, synthesis of natural and artificial compounds useful for the cure of diseases and improvement of human lives.

EDUCATION

2005/4-2010/3 **Doctoral and Masters Degree in Engineering**
Kyoto University, Japan

- Major: Material Chemistry
- Advisor: Prof. Tamejiro Hiyama
- Dissertation: Studies on Nickel-catalyzed Hydroarylation and Hydrocarbamoylation of Alkynes
- Received multiple research awards

2003/4-2005/3 **Bachelors Degree in Engineering**
Nagoya Institute of Technology, Japan

- Major: Applied Chemistry
- Advisor: Prof. Takeshi Toru
- Research title: Enantioselective Fluorination using Cinchona Alkaloid Catalysts

2000/4-2003/3 **Diploma in Engineering**
Suzuka National Collage of Technology, Japan

- Major: Chemistry and Biochemistry
- Advisor: Prof. Tomizawa Kohtaro

1999/4-2000/3 **Japanese Language**
Japanese School of International Students, Japan

- Comprehensive study of Japanese language (writing, reading, speaking, listening)

1994/2-1997/10 **Makueni Boys High School, Kenya**

RESEARCH/WORKING EXPERIENCE

2010/4-2012/3 **Postdoctoral Research**
Columbia University, New York

- Total synthesis of complex natural products (more coming soon).

2005/4-2010/3 **Doctoral and Master Thesis Research**
Kyoto University, Japan

- Developed novel Nickel-catalyzed reactions effective for hydroarylation of alkynes with electron-deficient aromatic compounds such as fluoroarenes, indoles and pyridine-*N*-oxides. The reactions provide a simple and atom-economical access to highly functionalized disubstituted heteroarylethenes in chemo-, regio- and stereoselective manners under

mild conditions.

- Developed Nickel/Lewis acid cooperative catalysis systems applicable to direct insertion of unsaturated compounds into C–H bonds of imidazoles, pyridines, pyridones and formamides. The developed strategy allows for direct functionalization of these compounds under relatively mild conditions compared to previously known methods.

2009/5-2009/6 **Collaborative Research**
Osaka University, Japan

- In a collaborative research with Prof. Sensuke Ogoshi at Osaka University, I elucidated and identified the intermediates in the mechanism of the Nickel-catalyzed addition of alkynes into C–H bonds of fluoroarenes.

2004/4-2005/3 **Undergraduate Research**
Nagoya Institute of Technology, Japan

- Mentored by Prof. Takeshi Toru, I unraveled that NFSI and NFBSI are moderately effective in the cinchona alkaloid-catalyzed enantioselective fluorination of β-keto esters.

1998/4-1999/3 **Makueni Boys High School**

- Worked as untrained high school teacher immediately after graduating from high school.

GRANTS

- Honjo International Scholarship Foundation, 2006/4-2010/3
- Ichihara International Foundation, 2004/4-2005/3
- Japanese Ministry of Education, Culture, Sports, Science and Technology, 1999/4-2003/3
- Save the Children Fund, 1994/2-1997/10

AWARDS

- CSJ Presentation Award, 2009
- Gordon Research Conference on Organic Reactions and Processes, Best Presentation Award, 2008
- The 14th IUPAC International Symposium on Organometallic Chemistry directed towards Organic Synthesis (OMCOS 14), Poster Presentation Award, 2007
- Kyoto and Osaka Universities Student Discussion Forum, Winner of Best Project, 2007
- Suzuka International University, Best Speech Award, 2002
- High School Iten Mathematics Contest (IMC) Award, 1997

LANGUAGES

- Fluent in English, Japanese, Swahili and Kamba

MEMBERSHIP

- American Chemical Society
- Chemical Society of Japan

INTERESTS AND HOBBIES

- Soccer, short and long-distance running.
- Singing and playing instruments such as traditional African drum (Kithembe).
- Travelling, sightseeing, visiting new places, meeting people and learning new cultures.
- Farming – keeping cattle and planting crops.

RESEARCH PUBLICATIONS

1. Kanyiva, S. K.; Kashihara, N.; Nakao, Y.; Hiyama, T.; Ohashi, M.; Ogoshi, S. *Dalton Transactions* **2010***, 39,* 10483–10494*.* "Hydrofluoroarylation of Alkynes with Fluoroarenes"
2. Nakao, Y.; Kashihara, N.; Kanyiva, S. K.; Hiyama, T. *Angew. Chem., Int. Ed.* **2010***, 49,* 4451–4454*.* "Nickel-Catalyzed Hydroheteroarylation of Vinylarenes"
3. Nakao, Y.; Idei, H.; Kanyiva, S. K.; Hiyama, T. *J. Am. Chem. Soc.* **2009**, *131*, 15996–15997. "Direct Alkenylation and Alkylation of Pyridone Derivatives by Nickel/$AlMe_3$ Catalysis"
4. Kanyiva, K. S.; Löbermann, F.; Nakao, Y.; Hiyama, T. *Tetrahedron Lett.* **2009**, *50*, 3463–3466. "Regioselective Alkenylation of Imidazoles by Nickel/Lewis-Acid Catalysis"
5. Nakao, Y.; Idei, H; Kanyiva, K. S.; Hiyama, T. *J. Am. Chem. Soc.* **2009**, *131*, 5070–5071. "Hydrocarbamoylation of Unsaturated Bonds by Nickel/Lewis-Acid Catalysis"
6. Nakao, Y.; Kashihara, N; Kanyiva, K. S.; Hiyama, T. *J. Am. Chem. Soc.* **2008**, *130*, 16170–16171. "Nickel-Catalyzed Alkenylation and Alkylation of Fluoroarenes via Activation of C–H Bond over C–F Bond"
7. Nakao, Y.; Kanyiva, K. S.; Hiyama, T. *J. Am. Chem. Soc.* **2008**, *130*, 2448–2449. "A Strategy for C–H Bond Activation of Pyridines: Direct C-2 Selective Alkenylation of Pyridines by Nickel/Lewis Acid Catalysis"
8. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *Heterocycles* **2007**, *72*, 677–680. "Practical Approach for Hydroheteroarylation of Alkynes Using Bench-Stable Catalyst"
9. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *Angew. Chem., Int. Ed.* **2007**, *46*, 8872–8874. "Nickel-Catalyzed Addition of Pyridine-*N*-oxides across Alkynes"
10. Nakao, Y.; Kanyiva, K. S.; Oda, S.; Hiyama, T. *J. Am. Chem. Soc.* **2006**, *128*, 8146–8147. "Hydroheteroarylation of Alkynes under Mild Nickel Catalysis"

MAIN ORAL PRESENTATIONS

1. Kanyiva K. S.; Idei, H.; Löbermann, F.; Nakao, Y.; Hiyama, T. *Frühjahrssymposium ~ 12th Young Scientists Conference on Chemistry,* Göttingen, Germany, March 17th, **2010**. "Nickel/Lewis Acid Catalyzed addition of Pyridines, Pyridones and Imidazoles across Alkynes"
2. Kanyiva, K. S.; Idei, H.; Löbermann, F.; Nakao, Y.; Hiyama, T. *The 89th Spring Annual Meeting of the Chemical Society of Japan,* Nihon University, (2F3-38), March 27–30, **2009**. "Nickel/Lewis Acid-Catalyzed Alkenylation of 2-Pyridones and Imidazoles"
3. Kanyiva, K. S.; Idei, H.; Nakao, Y.; Hiyama, Y. *Gordon Research Conference on Organic Reactions and Processes,* Bryant University, USA, July 13–18, **2008**. "Nickel/Lewis Acid-Catalyzed Hydroheteroarylation and Hydrocarbamoylation of Unsaturated Compounds"
4. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *The 88th Annual Meeting of the Chemical Society of Japan,* Rikkyo University, Japan, (4H2-12), March 26–30, **2008**. "Nickel/Lewis Acid-Catalyzed Addition Reaction of Pyridines across Alkynes"
5. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *The 87th Annual Meeting of the Chemical Society of Japan,* Kansai University, (1D5-49), March 25–28, **2007**. "Nickel-Catalyzed Addition of Pyridine-*N*-oxides across Alkynes"
6. Nakao, Y.; Kanyiva, K. S.; Oda, S.; Hiyama, T. *The 86th Annual Meeting of the Chemical Society of Japan,* Nihon University, (4H2-27), March 27–30, **2006**. "Nickel-Catalyzed Hydroarylation of Alkynes"

MAIN POSTER PRESENTATIONS

1. Kanyiva, K. S.; Kashihara, N.; Nakao, Y.; Hiyama, T.; Ohashi, M.; Ogoshi, S. *The 11th International Kyoto Conference on New Aspects of Organic Chemistry,* Kyoto, November 9–13, **2009**. "Nickel-Catalyzed Alkenylation and Alkylation of Polyfluoroarenes"
2. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *The First International Symposium on Process Chemistry (ISPC 08),* ICC Kyoto, (2P-72), July 28–30, **2008**. "Nickel/Lewis Acid-Catalyzed Hydroheteroarylation Reaction of Alkynes"

3. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *The 54th Symposium on Organometallic Chemistry, Japan,* Hiroshima University, (PB210), October 27–28, **2007**. "Nickel-Catalyzed Addition of Pyridine Derivatives across Alkynes"
4. Kanyiva, K. S.; Nakao, Y.; Hiyama, T. *The 14th IUPAC International Symposium on Organometallic Chemistry Directed towards Organic Synthesis – OMCOS 14,* Nara, (P-485), August 2–6, **2007**. "Nickel-Catalyzed Hydroheteroarylation of Alkynes"
5. Nakao, Y.; Kanyiva, K. S.; Oda, S.; Hiyama, T. *The Fifth International Forum on Chemistry of Functional Organic Chemicals* Tokyo, (P-14), November 19–20, **2006**. "Hydroheteroarylation of Alkynes under Mild Nickel Catalysis"
6. Nakao, Y.; Kanyiva, K. S.; Oda, S.; Hiyama, T. *The 10th International Kyoto Conference on New Aspects of Organic Chemistry,* Kyoto, (PA-077), November 13–17, **2006**. "Hydroheteroarylation of Alkynes under Mild Nickel Catalysis"
7. Fukuzumi, T.; Sugiura, M.; Kanyiva, K. S.; Nakamura, S.; Shibata, N.; Toru, T. *Proceedings of the 85th Annual Meeting of the Chemical Society of Japan,* Kanagawa, (IC2-14A), March 26–29, **2005**. "Preparation of Sterically Bulky N-fluorobenzenesulfonamides and their Assessment for Electrophilic Fluorination"

REFERENCES

Prof. Tamejiro Hiyama
Professor Emeritus, Kyoto University
Professor, Research & Development Initiative
Faculty of Engineering Science, Chuo University
1-13-27 Kasuga, Bunkyo-ku, Tokyo 112-8551, Japan
Tel: (+81)-3-3817-1628
E-mail: thiyama@kc.chuo-u.ac.jp

Prof. Scott A. Snyder
Assistant Professor of Chemistry
Columbia University
Havemeyer Hall, MC 3129
3000 Broadway, New York, 10027, USA
Tel: (+1)-212-854-3817
E-mail: sas2197@columbia.edu

Dr. Yoshiaki Nakao
Senior Lecturer
Department of Material Chemistry,
Graduate School of Engineering
Kyoto University, Katsura
Nishikyo-ku, Kyoto 615-8510, Japan
Tel: (+81)-7-5383-2443
E-mail: yoshiakinakao@npc05.mbox.media.kyoto-u.ac.jp