

## Hiroshi Naka

Research Center for Materials Science, Nagoya University

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### Current appointments

Assistant Professor at Research Center for Materials Science, Nagoya University

### Research interests

Solving problems related to organic/organometallic chemistry and catalysis. In particular, (1) Homogeneous/heterogeneous catalysis using simple substances ( $H_2$ ,  $H_2O$  and  $CO_2$ ) for selective organic synthesis. (2) Photocatalytic conversion of alcohols for fine chemical synthesis. (3) Chemical biology based on transition metal complexes.

### Employment

2008–present	Assistant Professor Research Center for Materials Sciences, Nagoya University (with Profs. Ryoji Noyori and Susumu Saito)
2006–2008	Research Associate Graduate School of Pharmaceutical Sciences, Tohoku University (with Prof. Yoshinori Kondo)

### External appointments

2012–present	Visiting Research Fellow	Tokyo University of Science
2008–2010	Visiting Research Fellow	Hokuriku University
2006–present	Visiting Research Fellow	RIKEN

### Education

2008	Ph.D. in Chemistry, Nagoya University (Profs. Masanobu Uchiyama and Shigehiro Yamaguchi)
2005	Visiting Student at Vrije Universiteit Amsterdam, Netherlands (Prof. Koop Lammertsma)
2005	M.S. in Pharmaceutical Sciences and Clinical Pharmacy, the University of Tokyo
2003	B.S. in Pharmaceutical Sciences, the University of Tokyo

### Membership

The Chemical Society of Japan; The Pharmaceutical Society of Japan; The American Chemical Society; The Society of Synthetic Organic Chemistry; Catalysis Society of Japan; Kinka Chemical Society; Institute for Quantum Chemical Exploration; The Noyori Forum

### Personal

Gender: Male; Nationality: Japanese; Date/place of birth: Born June 1, 1980 / Tokyo.  
Married, a father of a son.

## Awards and Honors

- 2018 Toyota Riken Scholar  
2015 Asian Core Program/Advanced Research Network Lectureship Award (Singapore)  
2014 Chemical Society of Japan Presentation Award  
2005 JSPS Research Fellowship for Young Scientists (DC1)

## Grants

1. AIST–Nagoya University Joint Funding  
"Development of Flow Reactor for Heterogeneous Photocatalysis"  
Hiroshi Naka (PI, Nagoya Univ.)  
2019–2020, 400,000 JPY.
2. Iwatani Foundation  
"TBA"  
Hiroshi Naka (PI, Nagoya Univ.)  
2019–2020, 2,000,000 JPY.
3. AIST–Nagoya University Joint Funding  
"Development of Flow Reactor for Heterogeneous Photocatalysis"  
Hiroshi Naka (PI, Nagoya Univ.)  
2018–2019, 800,000 JPY.
4. Integrated Research on Chemical Synthesis, MEXT, Japan  
"Organometallic Probes for Sulfated Sugars"  
Hiroshi Naka (PI, Nagoya Univ.), Takato Hara (CI, Toho Univ.)  
2018–2019, 500,000 JPY.
5. Toyota Riken Scholar Project  
"Transfer Hydration and Dehydration of Organic Compounds"  
Hiroshi Naka (PI, Nagoya Univ.)  
2018–2019, 1,000,000 JPY.
6. Grant-in-Aid for Scientific Research (C), MEXT, Japan  
"Selective Transfer (De)hydration"  
Hiroshi Naka (PI, Nagoya Univ.)  
2017–2020, 3,700,000 JPY.
7. Grant from JGC Scholarship Foundation, MEXT, Japan  
"Conversion of Alcohols by Semiconductor Photocatalysts for Organic Synthesis"  
Hiroshi Naka (PI, Nagoya Univ.)  
2017–2018, 2,000,000 JPY.
8. Integrated Research on Chemical Synthesis, MEXT, Japan  
"Control of Photocatalysis by Precise Surface Modification of Heterogeneous Photocatalysts"  
Hiroshi Naka (PI, Nagoya Univ.), Mitushiro Arisawa (CI, Osaka Univ.), Andrew E. H. Wheatley (CI, Univ. Cambridge)  
2017–2018, 500,000 JPY.
9. Grant-in-Aid for Scientific Research (C), (Generative Research Fields) MEXT, Japan  
"Transition State Design for Inventing Hydration Catalysts"  
Hiroshi Naka (PI, Nagoya Univ.)  
2015–2019, 3,600,000 JPY.
10. Grant from TOBE MAKI Scholarship Foundation

- “Catalytic Conversion of Aliphatic Alcohols for Organic Synthesis”  
Hiroshi Naka (PI, Nagoya Univ.)  
2015–2016, 1,000,000 JPY.
11. Integrated Research on Chemical Synthesis, MEXT, Japan  
"Rapid Conversion of Hydrophobic Esters"  
Hiroshi Naka (PI, Nagoya Univ.), Tomomi Koshiyama (CI, Kyushu Univ.)  
2015–2016, 500,000 JPY.
  12. International Exchanges Scheme (inc RIA and MOST), The Royal Society, UK  
"New Chitin-supported Nanocatalysts for Selective Arene Hydrogenation"  
Andrew E. H. Wheatley (PI, Univ. of Cambridge), Hiroshi Naka (Co-PI, Nagoya Univ.)  
2015–2016, 6000.00 GBP (ca. 1,100,000 JPY in 2015).
  13. Grant-in-Aid for Scientific Research (C), MEXT, Japan  
"Photocatalytic Transformation of Alcohols for Selective Organic Synthesis"  
Hiroshi Naka (PI, Nagoya Univ.)  
2014–2018, 3,900,000 JPY.
  14. Grant from Ichihara International Scholarship Foundation  
“Structure and Function of Polysaccharide-supported Ruthenium Catalysts”  
Hiroshi Naka (PI, Nagoya Univ.)  
2014–2015, 500,000 JPY.
  15. Noyori Forum Joint Project  
"Photocatalysts for Using Alcohols as Carbon Resources"  
Ryoji Noyori (PI, Nagoya Univ.), Susumu Saito (Co-PI, Nagoya Univ.), Hiroshi Naka (Co-PI, Nagoya Univ.)  
2013–2014, 24,000,000 JPY (Funds from 5 chemical companies).
  16. Integrated Research on Chemical Synthesis, MEXT, Japan  
"Highly Chemoselective Nitrile Hydration"  
Hiroshi Naka (PI, Nagoya Univ.), Ken-ichi Shimizu (CI, Hokkaido Univ.)  
2013–2014, 500,000 JPY.
  17. Grant from Yoshida Foundation for Science and Technology  
"Cobalt-catalyzed Markovnikov Functionalization of Terminal Alkynes"  
Hiroshi Naka (PI, Nagoya Univ.)  
2012–2013, 250,000 JPY (Travel Grant).
  18. Integrated Research on Chemical Synthesis, MEXT, Japan  
"Reaction Mechanism on Cobalt-catalyzed Hydration of Alkynes"  
Hiroshi Naka (PI, Nagoya Univ.), Takashi Kamachi (CI, Kyusyu Univ.)  
2012–2013, 500,000 JPY.
  19. Grant-in-Aid for Young Scientists (B), MEXT, Japan  
"Porphyrin-based Molecular Catalysts for Hydration Reactions"  
Hiroshi Naka (PI, Nagoya Univ.)  
2011–2013, 3,600,000 JPY.
  20. Integrated Research on Chemical Synthesis, MEXT, Japan (w/ Hokkaido Univ.)  
"Solid-supported Catalysts for Nitrile Hydration"  
Hiroshi Naka (PI, Nagoya Univ.), Ken-ichi Shimizu (Hokkaido Univ. CI)  
2011–2012, 1,000,000 JPY.
  21. Noyori Forum Joint Project

- "Basic Research on Transformation of Carbon Dioxide"  
 Susumu Saito (PI, Nagoya Univ.), Ryoji Noyori (Co-PI, Nagoya Univ.), Hiroshi Naka (Co-PI, Nagoya Univ.)  
 2010–2011, 24,000,000 JPY (Funds from 7 chemical companies).
22. Noyori Forum Joint Project  
 "Design and Application of Multi-functional Molecular Catalyst"  
 Susumu Saito (PI, Nagoya Univ.), Ryoji Noyori (Co-PI, Nagoya Univ.), Hiroshi Naka (Co-PI, Nagoya Univ.)  
 2008–2010, 48,000,000 JPY (Funds from 8 chemical companies).
23. Nagoya University Science Foundation  
 "Robust Catalysts with New Molecular Mechanisms"  
 Hiroshi Naka (PI, Nagoya Univ.)  
 2008–2009, 328,000 JPY (Competitive start-up funding from Nagoya University).
24. Grant-in-Aid for Young Scientists (B), MEXT, Japan  
 "Origin of Selectivity in Ate-complexes-mediated Construction of Aromatic Compounds"  
 Hiroshi Naka (PI, Tohoku Univ.)  
 2007–2008, 3,640,000 JPY.
25. Tohoku University G-COE Grant for Young Scientists  
 "Construction of Higher-order Organic Materials Using Chemoselective Bases"  
 Hiroshi Naka (PI, Tohoku Univ.)  
 2007–2008, 2,000,000 JPY.
26. Grant from Tohoku Kaihatsu Foundation  
 "Structure and Function of Phosphazene–Metal Complexes"  
 Hiroshi Naka (PI, Tohoku Univ.)  
 2007–2008, 220,000 JPY (Travel Grant).

### **International Invited Lectures**

- 2019 Core-to-Core and GTR Symposium, Nagoya University, Nagoya.
- 2019 Chemistry Department Seminar, Dalhousie University, Canada.
- 2019 McGill Chemical Society Seminar, McGill University, Canada.
- 2019 Chemistry Department Seminar, Queen's University, Canada.
- 2019 Special Department Seminar, University of Ottawa, Canada.
- 2019 Special Chemistry Seminar, University of Toronto, Canada.
- 2019 Department Seminar, University of Alberta, Canada.
- 2019 Organic Seminar, University of British Columbia, Canada.
- 2017 ACP Lectureship Award Seminar, National University of Singapore, Singapore.
- 2017 ACP Lectureship Award Seminar, Nanyang Technological University, Singapore.
- 2015 Intergroup Seminar at the Laboratory of Organic Chemistry, ETH Zurich, Switzerland.
- 2011 11<sup>th</sup> IRTG Joint Symposium, University of Muenster, Muenster, Germany.
- 2010 Pacificchem2010 (Early Main Group Chemistry), Honolulu, Hawaii, USA.
- 2010 The 4th International G-COE Chem6 Symposium for Emergence of New Molecular Chemistry, Tokyo Institute of Technology, Tokyo.
- 2010 International Research Training Group "Complex Functional Systems in Chemistry" Muenster (GER) - Nagoya (JPN) Lectureship, University of Muenster, Muenster, Germany.

### **Domestic Invited Lectures**

- 2018 Kyoto Univ. Human & Environmental Studies Winter Seminar, Kyoto University, Kyoto.  
2018 Interdisciplinary Seminar, Toho University, Chiba.  
2018 The First Conference on Deuterium Materials, Nagoya Institute of Technology, Nagoya.  
2018 Special Lecture on Molecular Transformation, Tohoku University, Sendai.  
2017 JPIJS Lecture, Shizuoka University, Hamamatsu.  
2016 Conference on Molecular Catalysts in Next Generation, Institute of Molecular Science, Okazaki.  
2016 IQCE Lecture, The University of Tokyo, Tokyo.  
2014 Special Lecture of Pharmaceutical Society of Japan, Tokai Region, Aichi Gakuin University, Nagoya.  
2010 Hokuriku University Academic Frontier Annual Meeting FY2009, Hokuriku University, Kanazawa.  
2010 Hokuriku University Academic Frontier Special Lecture, Hokuriku University, Kanazawa.  
2009 Special Lecture of Pharmaceutical Society of Japan, Tokai Region, Aichi Gakuin University, Nagoya.  
2008 Tohoku University G-COE Lecture, Tohoku University, Sendai.

### **Teaching in English**

- 2017 Studium Generale (all undergraduate), Nagoya U.  
2014–present School of Science, Chemistry Laboratory (3rd year undergraduate), Nagoya U.  
2010 IRTG Seminar (graduates), Muenster U.

### **Teaching in Japanese**

- 2014–present School of Science, Chemistry Exercise (4th year undergraduate), Nagoya U.  
2008–present School of Science, Chemistry Laboratory (3rd year undergraduate), Nagoya U.  
2006–2008 School of Pharmaceutical, Laboratory Works (3rd year undergraduate), Tohoku U.

### **Consulting/Outreach**

- 2017 Aichi Science Festival Lecture (to public citizens)  
2015 The Chemical Society of Japan Chemistry Grand Prix (managing member)  
2009–present The Noyori Forum (core academic member)  
2011 (Aug 1–3) The Noyori Laboratory Presents Luncheon Forum (organizer and lecturer; event for high school students) *Highlighted in the Chunichi Newspaper (Aug. 2, 2011), Official Activity of International Year of Chemistry 2011 (IUPAC)*

## Selected List of Publications with Brief Descriptions

1. **Catalytic Transfer Hydration of Cyanohydrins to  $\alpha$ -Hydroxyamides**

T. Kanda, A. Naraoka, \*H. Naka

*J. Am. Chem. Soc.* **141**, 825–830 (2019).

Hydration of cyanohydrins to  $\alpha$ -hydroxycarboxamides is one of the most important reactions in synthetic chemistry. However, hydration of cyanohydrins is not always straightforward. This paper describes the palladium(II)-catalyzed transfer hydration of cyanohydrins to  $\alpha$ -hydroxyamides by using carboxamides as water donors. This method enables selective hydration of various cyanohydrins to afford  $\alpha$ -hydroxyamides under mild conditions.

2. **N-Alkylation of Functionalized Amines with Alcohols Using a Copper-Gold Mixed Photocatalytic System**

L.-M. Wang, Y. Morioka, K. Jenkinson, \*A.E.H. Wheatley, \*S. Saito, \*H. Naka

*Sci. Rep.* **8**, 6931 (2018).

A mixed heterogeneous photocatalytic system of Cu/TiO<sub>2</sub> and Au/TiO<sub>2</sub> was developed for N-alkylation of amines with alcohols. This method allowed the first, practical photocatalytic synthesis of variously functionalized amines, as well as selective monoalkylation and non-symmetrical dialkylation.

3. **Hydration of Nitriles to Amides by a Chitin-supported Ruthenium Catalyst**

A. Matsuoka, T. Isogawa, Y. Morioka, B. R. Knappett, \*A. E. H. Wheatley, \*S. Saito, \*H. Naka

*RSC Adv.* **5**, 12152–12160 (2015).

A robust method for hydration of nitriles was developed by using chitin-supported ruthenium catalyst. Chitin proved to be the best as a support for Ru nanoparticles.

4. **Hydration of Terminal Alkynes Catalyzed by Water-Soluble Cobalt Porphyrin Complexes.**

T. Tachinami, T. Nishimura, R. Ushimaru, R. Noyori, \*H. Naka

*J. Am. Chem. Soc.* **135**, 50–53 (2013).

The first cobalt(III)-catalyzed alkyne hydration was discovered. This method allowed highly chemoselective hydration of variously functionalized alkynes and opened a new field of Co<sup>III</sup> catalysis.

5. **A Mixed Alkyl-amido Aluminate as a Kinetically Controlled Base**

\*H. Naka, J. V. Morey, J. Haywood, D. Eisler, M. McPartlin, F. García, H. Kudo, Y. Kondo, \*M.

Uchiyama, \*A. E. H. Wheatley

*J. Am. Chem. Soc.* **130**, 16193–16200 (2008).

Highly kinetically controlled nature of a mixed aluminate base, *i*-Bu<sub>3</sub>Al(TMP)Li was clarified by means of spectroscopic and computational methods.

6. **An Aluminum Ate Base: Its Design, Structure, Function and Reaction Mechanism**

\*H. Naka, \*M. Uchiyama, Y. Matsumoto, \*A. E. H. Wheatley, M. McPartlin, J. V. Morey, Y. Kondo

*J. Am. Chem. Soc.* **129**, 1921–1930 (2007).

The first direct, general method for the preparation of aryl aluminum species was established.

## List of Full Publications

### Original Papers

1. Catalytic Transfer Hydration of Cyanohydrins to  $\alpha$ -Hydroxyamides  
Tomoya Kanda, Asuka Naraoka, \*Hiroshi Naka  
*J. Am. Chem. Soc.* **141**, 825–830 (2019).
2. Pd-Catalyzed  $\beta$ -Selective C–H Arylation of Thiophenes with Triarylantimony Difluorides  
Yuki Kitamura, Yuki Murata, Ayaka Oguri, Mio Matsumura, Naoki Kakusawa, \*Hiroshi Naka, \*Shuji Yasuike  
*Asian J. Org. Chem.* **8**, 138–143 (2019).
3. Pd/TiO<sub>2</sub>-Photocatalyzed Self-Condensation of Primary Amines to Afford Secondary Amines at Ambient Temperature  
Lyu-Ming Wang, Kensuke Kobayashi, Mitsuhiro Arisawa, \*Susumu Saito, \*Hiroshi Naka  
*Org. Lett.* **21**, 341–344 (2019). (*Highlighted in Front Cover.*)
4. Photocatalytic N-Methylation of Amines over Pd/TiO<sub>2</sub> for the Functionalization of Heterocycles and Pharmaceutical Intermediates  
Lyu-Ming Wang, Kellie Jenkinson, Andrew E. H. Wheatley, Keiko Kuwata, Susumu Saito, \*Hiroshi Naka  
*ACS Sustainable Chem. Eng.* **6**, 15419–15424 (2018).
5. Copper(II) Bis(Diethyldithiocarbamate) Induces the Expression of Syndecan-4, a Transmembrane Heparan Sulfate Proteoglycan, via P38 MAPK Activation in Vascular Endothelial Cells  
Takato Hara, Hiroko Tatsuishi, Tomomi Banno, Tomoya Fujie, Chika Yamamoto, Hiroshi Naka, \*Toshiyuki Kaji  
*Int. J. Mol. Sci.* **19**, 3302 (2018).
6. N-Alkylation of Functionalized Amines with Alcohols Using a Copper-Gold Mixed Photocatalytic System  
Lyu-Ming Wang, Yuna Morioka, Kellie Jenkinson, \*Andrew E. H. Wheatley, \*Susumu Saito, \*Hiroshi Naka  
*Sci. Rep.* **8**, 6931 (2018).
7. Photocatalytic Hydrogenolysis of Allylic Alcohols for Rapid Access to Platform Chemicals and Fine Chemicals  
Yuki Takada, Joaquim Caner, Hiroshi Naka, \*Susumu Saito  
*Pure Appl. Chem.* **90**, 167–174 (2018). (invited conference paper)
8. A Fluorinated Cobalt(III) Porphyrin Complex for Hydroalkoxylation of Alkynes  
Richiro Ushimaru, Takuho Nishimura, Toshiki Iwatsuki, \*Hiroshi Naka  
*Chem. Pharm. Bull.* **65**, 1000–1003 (2017).
9. Photocatalytic Transfer Hydrogenolysis of Allylic Alcohols on Pd/TiO<sub>2</sub>: A Shortcut to (S)-(+)-Lavandulol  
Yuki Takada, Joaquim Caner, Kaliyamoorthy Selvam, Hiroshi Naka, \*Susumu Saito  
*Chem. Eur. J.* **23**, 18025–18032 (2017).
10. Copper Diethyldithiocarbamate as an Inhibitor of Tissue Plasminogen Activator Synthesis in Cultured Human Coronary Endothelial Cells

- Tomoya Fujie, Shiori Okino, Eiko Yoshida, Chika Yamamoto, \*Hiroshi Naka, \*Toshiyuki Kaji  
*J. Toxicol. Sci.* **42**, 553–558 (2017).
11. A Versatile Synthesis of Triarylantimony Difluorides by Fluorination of Triarylstibanes with Nitrosyl Tetrafluoroborate and Their Antitumor Activity  
Yuki Kitamura, Mio Matsumura, Yuki Murata, Mizuki Yamada, Naoki Kakusawa, Motohiro Tanaka, Hiroyuki Okabe, \*Hiroshi Naka, \*Tohru Obata, \*Shuji Yasuike  
*J. Fluorine Chem.* **199**, 1–6 (2017).
  12. Dehydrogenation of Primary Aliphatic Alcohols by Au/TiO<sub>2</sub> Photocatalysts  
Masaki Shibata, Ryoko Nagata, Susumu Saito, \*Hiroshi Naka  
*Chem. Lett.* **46**, 580–582 (2017).
  13. Selective Hydrogenation of Arenes to Cyclohexanes in Water Catalyzed by Chitin-Supported Ruthenium Nanoparticles  
Yuna Morioka, Aki Matsuoka, Kellie Binder, Benjamin R. Knappett, \*Andrew E. H. Wheatley, \*Hiroshi Naka  
*Catal. Sci. Technol.* **6**, 5801–5805 (2016).
  14. Copper Diethyldithiocarbamate as an Activator of Nrf2 in Cultured Vascular Endothelial Cells  
Tomoya Fujie, Masaki Murakami, Eiko Yoshida, Tadashi Tachinami, Yasuhiro Shinkai, Yasuyuki Fujiwara, Chika Yamamoto, Yoshito Kumagai, \*Hiroshi Naka, \*Toshiyuki Kaji  
*J. Biol. Inorg. Chem.* **21**, 263–273 (2016).
  15. Induction of Metallothionein Isoforms by Copper Diethyldithiocarbamate in Cultured Vascular Endothelial Cells  
Tomoya Fujie, Yukino Segawa, Tomoki Kimura, Yasuyuki Fujiwara, Chika Yamamoto, Masahiko Satoh, \*Hiroshi Naka, \*Toshiyuki Kaji  
*J. Toxicol. Sci.* **41**, 225–232 (2016).
  16. Zinc Diethyldithiocarbamate as an Inducer of Metallothionein in Cultured Vascular Endothelial Cells  
Tomoya Fujie, Yukino Segawa, Akane Uehara, Takehiro Nakamura, Tomoki Kimura, Eiko Yoshida, Chika Yamamoto, Masanobu Uchiyama, \*Hiroshi Naka, \*Toshiyuki Kaji  
*J. Toxicol. Sci.* **41**, 217–224 (2016).
  17. N-Methylation of Amines with Methanol at Room Temperature  
Vasily N. Tsarev, Yuna Morioka, Joaquim Caner, Qing Wang, Richiro Ushimaru, Akihiko Kudo, Hiroshi Naka, \*Susumu Saito  
*Org. Lett.* **17**, 2530–2533 (2015).
  18. Hydration of Nitriles to Amides by a Chitin-supported Ruthenium Catalyst  
Aki Matsuoka, Takahiro Isogawa, Yuna Morioka, Benjamin R. Knappett, \*Andrew E. H. Wheatley, \*Susumu Saito, \*Hiroshi Naka  
*RSC Adv.* **5**, 12152–12160 (2015).
  19. Why *p*-Cymene? Conformational Effect in Asymmetric Hydrogenation of Aromatic Ketones with a  $\eta^6$ -Arene/Ruthenium(II) Catalyst  
Aki Matsuoka, Christian A. Sandoval, Masanobu Uchiyama, Ryoji Noyori, \*Hiroshi Naka  
*Chem. Asian J.* **10**, 112–115 (2015).



20. Synthesis of Propylene from Renewable Allyl Alcohol by Photocatalytic Transfer Hydrogenolysis  
Joaquim Caner, Zijun Liu, Yuki Takada, Akihiko Kudo, Hiroshi Naka, \*Susumu Saito  
*Catal. Sci. Technol.* **4**, 4093–4098 (2014).
21. Activation of Cellular Defense Mechanism by Organic-Inorganic Hybrid Molecules  
Tomoya Fujie, Hiroshi Naka, Chika Yamamoto, Yasuhiro Shinkai, Yoshito Kumagai, \*Toshiyuki Kaji  
*Yakugaku Zasshi* **134**, 813–815 (2014).
22. Redox-Selective Generation of Aldehydes and H<sub>2</sub> from Alcohols under Visible Light  
Zijun Liu, Joaquim Caner, Akihiko Kudo, Hiroshi Naka, \*Susumu Saito  
*Chem. Eur. J.* **19**, 9452–9456 (2013). (*Highlighted in Synfacts* **9**, 1138 (2013).)
23. Hydration of Terminal Alkynes Catalyzed by Water-Soluble Cobalt Porphyrin Complexes  
Tadashi Tachinami, Takuo Nishimura, Richiro Ushimaru, Ryoji Noyori, \*Hiroshi Naka  
*J. Am. Chem. Soc.* **135**, 50–53 (2013).
24. Acetals of *N,N*-Dimethylformamides: Ambiphilic Behavior in Converting Carbon Dioxide to Dialkyl Carbonates  
Yuki Takada, Aki Matsuoka, Ya Du, Hiroshi Naka, \*Susumu Saito  
*Chem. Lett.* **42**, 146–147 (2013).
25. Bis(L-cysteinato)zincate(II) as a Coordination Compound that Specifically Induces Metallothionein Gene Transcription Without Inducing Cell-stress-related Gene Transcript  
\*Tomoki Kimura, Kengo Yoshida, Chika Yamamoto, Minako Suzuki, Tomoko Uno, Masakazu Isobe, Hiroshi Naka, Shuji Yasuie, Masahiko Satoh, Toshiyuki Kaji, \*Masanobu Uchiyama  
*J. Inorg. Biochem.* **117**, 140–146 (2012).
26. One-Pot Nitrile Aldolization/Hydration Operation Giving  $\beta$ -Hydroxy Carboxamides  
Akihiro Goto, Hiroshi Naka, Ryoji Noyori, \*Susumu Saito  
*Chem. Asian J.* **6**, 1740–1743 (2011).
27. Generation of Arylzinc Reagents Through an Iodine–zinc Exchange Reaction Promoted by a Non-metallic Organic Superbase  
\*Hiroshi Naka, Keisuke Ito, Masahiro Ueno, Koji Kobayashi, \*Yoshinori Kondo  
*New J. Chem.* **34**, 1700–1706 (2010).
28. Chiral  $\eta^6$ -Arene/*N*-Tosylethylenediamine–Ruthenium(II) Complexes: Solution Behavior and Catalytic Activity for Asymmetric Hydrogenation  
\*Christian A. Sandoval, Fusheng Bie, Aki Matsuoka, Yoshiki Yamaguchi, Hiroshi Naka, Yuehui Li, Koichi Kato, Noriyuki Utsumi, Kunihiko Tsutsumi, Takeshi Ohkuma, Kunihiko Murata, \*Ryoji Noyori  
*Chem. Asian J.* **5**, 806–816 (2010).
29. S<sub>N</sub>2' Reaction of Organozinc Reagents Activated by Catalytic *t*Bu-P4 Base in the Presence of LiCl  
Koji Kobayashi, Masahiro Ueno, Hiroshi Naka, \*Yoshinori Kondo  
*Chem. Eur. J.* **15**, 9805–9809 (2009).
30. A Mixed Alkyl-amido Aluminate as a Kinetically Controlled Base  
\*Hiroshi Naka, James V. Morey, Joanna Haywood, Dana Eisler, Mary McPartlin, Felipe García, Hironaga Kudo, Yoshinori Kondo, \*Masanobu Uchiyama, \*Andrew E. H. Wheatley  
*J. Am. Chem. Soc.* **130**, 16193–16200 (2008).

31. Catalytic Deprotonative Functionalization of Propargyl Silyl Ethers with Imines  
\*Hiroshi Naka, Daiki Koseki, \*Yoshinori Kondo  
*Adv. Synth. Catal.* **350**, 1901–1906 (2008).
32. Chiral Bisphosphazides as Dual Basic Enantioselective Catalysts  
\*Hiroshi Naka, Nobuhiko Kanase, Masahiro Ueno, \*Yoshinori Kondo  
*Chem. Eur. J.* **14**, 5267–5274 (2008).
33. Organozinc Reagents in DMSO Solvent: Remarkable Promotion of S<sub>N</sub>2' Reaction for Allene Synthesis  
Koji Kobayashi, Hiroshi Naka, Andrew E. H. Wheatley, \*Yoshinori Kondo  
*Org. Lett.* **10**, 3375–3377 (2008).
34. Activation of Organozinc Reagents with *t*-Bu-P4 Base for Transition Metal-free Catalytic S<sub>N</sub>2' Reaction  
Koji Kobayashi, Hiroshi Naka, Andrew E. H. Wheatley, \*Yoshinori Kondo  
*Chem. Commun.* 3780–3782 (2008).
35. Suppressing the Anionic Fries Rearrangement of Aryl Dialkylcarbamates; the Isolation of a Crystalline ortho-Deprotonated Carbamate  
Felipe García, Mary McPartlin, James V. Morey, Daisuke Nobuto, Yoshinori Kondo, Hiroshi Naka,  
\*Masanobu Uchiyama, \*Andrew E. H. Wheatley  
*Eur. J. Org. Chem.* 644–647 (2008).
36. Solid-phase Synthesis of Phthalocyanine and Tetraazaporphyrin Triangular Prisms  
Atsuya Muranaka, Kengo Yoshida, Yusuke Akagi, Hiroshi Naka, Masanobu Uchiyama Yoshinori Kondo,  
\*Nagao Kobayashi  
*Tetrahedron Lett.* **49**, 5084–5086 (2008).
37. On the Kinetic and Thermodynamic Reactivity of Lithium Di(alkyl)amidozincate Bases in Directed  
*Ortho* Metalation  
Yoshinori Kondo, James V. Morey, Jacqueline C. Morgan, Hiroshi Naka, Daisuke Nobuto, Paul R.  
Raithby, \*Masanobu Uchiyama, \*Andrew E. H. Wheatley  
*J. Am. Chem. Soc.* **129**, 12734–12738 (2007).
38. Theoretical Studies on Ortho Oxidation of Phenols with Dioxygen Mediated by Dicopper Complex:  
Hints for a Catalyst with the Phenolase Activity of Tyrosinase  
\*Hiroshi Naka, Yoshinori Kondo, Shinya Usui, Yuichi Hashimoto, \*Masanobu Uchiyama  
*Adv. Synth. Catal.* **349**, 595–600 (2007).
39. An Aluminum Ate Base: Its Design, Structure, Function and Reaction Mechanism  
\*Hiroshi Naka, \*Masanobu Uchiyama, Yotaro Matsumoto, \*Andrew E. H. Wheatley, Mary McPartlin,  
James V. Morey, Yoshinori Kondo  
*J. Am. Chem. Soc.* **129**, 1921–1930 (2007).
40. Fluorous Synthesis of Yuehchukene by alpha-Lithiation of Perfluoroalkyl-Tagged 1-(Arylsulfonyl)indole  
with Mesityllithium  
Hiroshi Naka, Yusuke Akagi, Kyoko Yamada, Tatsushi Imahori, Takahiro Kasahara, \*Yoshinori Kondo  
*Eur. J. Org. Chem.* 4635–4637 (2007).
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