

Faculty of Science

Nara Women's University

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SETO Mayumi

TAKAHASHI Satoshi

TAKASU Fugo

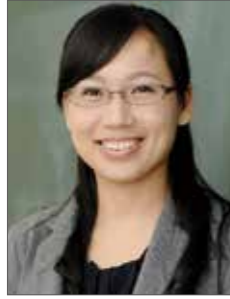


## Message from the Dean *Hisaki Hayashii*

Do you ever experience a feeling of mystery regarding the world around you or various natural phenomena? Science explains how and why these phenomena occur and provides a blueprint to guide the development of applicable technology to aid human society. The Faculty of Science at Nara Women's University has educated leading women who have both problem-finding and problem-solving capabilities cultivated through education and research in basic science at a high level. We understand the need to educate people who have a broad perspective and sense of values regarding issues such as the rapid globalization of modern society following the advancement of science, the diversification of values, and changes in hard-to-predict natural and social phenomena. This understanding led to the restructuring of our five departments. In the Faculty of Science, we have two major departments: the Department of Mathematical and Physical Sciences, and the Department of Chemistry, Biology, and Natural Environmental Sciences, which both provide education in combination and coordination with the other departments. Our aim is to "Educate students who have problem-finding and problem-solving capabilities based on a wide range of perspectives through education and active research in science at a high level."

The curriculum at the Faculty of Science first offers liberal arts education (basic and cultural subjects such as major subjects, foreign languages, health and physical education, and information processing) as basic subjects in order to study specific fields along with career education and subjects which are common in your department. It is possible to achieve a university education and gain further insight while reviewing knowledge from time to time based on the science courses you have taken. In addition, there is consideration for transfer to graduation and task-oriented research carried out by a small number of people through lectures, experiments, practical learning, and seminars on the subjects in each department. Students belong to research laboratories and they participate in a part of the most up-to-date scientific research by carrying out each graduation research topic. This type of curriculum nurtures the acquisition of skills such as scientific thinking, experimental techniques, foreign language abilities, and ability to make a presentation.

As one of only two national women's universities in Japan, Nara Women's University is educating and nurturing women who can contribute to the realization of a society (gender-equal society) where men and women can display their individuality and capabilities while showing mutual respect for one other. However, women currently account for only a small proportion in the fields of science and technology in Japan. We take various initiatives to support female researchers and focus efforts to establish education and research environments. You too can travel through the wonderful world of science together with us following our education system in the beautiful campus of Nara Women's University.



### Three-manifold topology, knot theory

**JANG Yeonhee / Assistant Professor**

yeonheejang@cc.nara-wu.ac.jp

**EDUCATION:** 2011 Division of Mathematics, Graduate School of Sciences, Hiroshima University  
2008 Division of Mathematics, Graduate School of Sciences, Osaka University

**ACADEMIC DEGREES:** Ph.D. Hiroshima University

#### SUBJECT OF RESEARCH:

3-manifold, knots and links

#### SELECTED PUBLICATIONS:

1. A knot with destabilized bridge spheres of arbitrarily high bridge number

Jang Y, Kobayashi T, Ozawa M, Takao K.

J. London Math. Soc., 93(2): 379-396 (2016)

DOI: 10.1112/jlms/jdw004

2. Bridge splittings of links with distance exactly  $n$

Ido A, Jang Y, Kobayashi T.

Topology and its Applications, 196: 608-617 (2015)

DOI: 10.1016/j.topol.2015.05.028

3. Heegaard splittings of distance exactly  $n$

Ido A, Jang Y, Kobayashi T.

Algebr. Geom. Topol., 14(3): 1395-1411 (2014)

DOI: 10.2140/agt.2014.14.1395

4. Distance of bridge surfaces for links with essential meridional spheres

Jang Y.

Pacific J. Math., 267(1): 121-130 (2014)

DOI: 10.2140/pfm.2014.267.121

5. A G-family of quandles and handlebody-knots

Isii A, Iwakiri M, Jang Y, Oshiro K.

Illinois Journal of Mathematics, 57(3): 817-838 (2013)



### Geometry and Topology

**KATAGIRI Minyo / Associate Professor**

katagiri@cc.nara-wu.ac.jp

**EDUCATION:** 1994 Graduate School of Science and Engineering, Keio University  
1990 Faculty of Science and Engineering, Keio University

**ACADEMIC DEGREES:** Ph.D. Science Keio University

#### SUBJECT OF RESEARCH:

1. Study on categorifications for graph polynomials

2. Study on topology of graphs and curves on surfaces

#### SELECTED PUBLICATIONS:

1. On the existence of Yang-Mills connections by cauforwal changes in higher dimensions

Katagiri M.

Journal of Mathematical Society of Japan, 46(1): 139 (1994)

2. Oncritical Riemannian metrics for a curvature functional on 3 manifolds

Katagiri M.

Proceedings of the Japan, 78A(4): 40 (2002)

3. On conformally flat critical Riemannian metrics for a curvature functional

Katagiri M.

Proceedings of the Japan Academy, 81A: 27-29 (2005)

4. Upper bounds for the Roman bondage number of graphs on closed surfaces

Katagiri M.

Annual Report of Graduate School of Humanities and Sciences Nara Women's University, 32 (2016)



### Algorithm for approximate algebraic computations

**KAKO Fujio / Professor**

kako@ics.nara-wu.ac.jp

**EDUCATION:** 1981 Graduate School of Engineering, Kyushu University  
1976 Faculty of Engineering, Kobe University

**ACADEMIC DEGREES:** Ph.D. Kyusyu University

#### SUBJECT OF RESEARCH:

1. Approximate Groebner Base

2. Symbolic and numeric algorithm for computer algebra

#### SELECTED PUBLICATIONS:

1. Solving Parametric Sparse Linear Systems by Local Blocking

Sasaki T, Inaba D, Kako F.

ACM Communications in Computer Algebra, 48(3): 137-139 (2014)

2. Solving Parametric Sparse Linear Systems by Local Blocking

Sasak i T, Inaba D, Kako F.

Lecture Notes in Computer Science, 8660: 403-418 (2014)

3. Towards Industrial Application of Approximate Computer Algebra

Sasak i T, Inaba D, Kako F.

Proc. Computer Algebra in Scientific Computing - 15th International Workshop, CASC 2013, Lecture Notes in Computer Science, 8136: 315-330 (2013)



### Three-manifold topology; Geometry of knots and links

**KOBAYASHI Tsuyoshi / Professor**

tsuyoshi@cc.nara-wu.ac.jp

**EDUCATION:** 1986 Graduate School of Science, Osaka University  
1981 Faculty of Science, Osaka University

**ACADEMIC DEGREES:** Ph.D. Osaka University

#### SUBJECT OF RESEARCH:

Low dimensional topology, 3-manifold, knot

#### SELECTED PUBLICATIONS:

1. A knot with destabilized bridge spheres of arbitrarily high bridge number

Jang Y, Kobayashi T, Ozawa M, Takao K.

J. London Math. Soc., 93(2): 379-396 (2016)

DOI: 10.1112/jlms/jdw004

2. Strong cylindricality and the monodromy of bundles

Ichihara K, Kobayashi T, Yo'av Rieck.

Proc. Amer. Math. Soc., 143: 3169-3176 (2015)

DOI: 10.1090/S0002-9939-2015-12473-2

3. Hyperbolic volume and Heegaard distance

Kobayashi T, Rieck Yo'av

Comm. Anal. Geom., 22(2): 247-268 (2014)

DOI: 10.4310/CAG.2014.v22.n2.a3

4. Heegaard splittings of distance exactly  $n$

Ido A, Jang Y, Kobayashi T.

Algebr. Geom. Topol., 14(3): 1395-1411 (2014)

DOI:10.2140/agt.2014.14.1395

## Group Theory, Representation theory

MATSUZAWA Junichi / Professor

matsuzawa@cc.nara-wu.ac.jp

EDUCATION: 1989 The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

### SUBJECT OF RESEARCH:

Group Theory

3. Representations of the normalizers of maximal tori of simple Lie groups

Matsuzawa J, Takahashi M.

Tukuba Journal of Mathematics, 33(2): 189-237 (2009)

### SELECTED PUBLICATIONS:

1. Hard spheres on the gyroid surface

Dotera T, Kimoto M, Matsuzawa J.

Interface Focus, 2(5): 575-581 (2012)

DOI: 10.1098/rsfs.2011.0092

4. Symmetry and Group Theory

Matsuzawa J.

Kobunshi (High Polymers, Japan) , 57(February): 66-70 (2008)

2. Hyperbolic Tiling on the Gyroid Surface in a Polymeric Alloy

Alloy

Dotera T, Matsuzawa J.

RIMS Kokyuroku, 1725: 80-91 (2011)

## Knot theory, 3-Manifold topology, foliations, and Origami

MURAI Hiroko / Assistant Professor

murai@cc.nara-wu.ac.jp

EDUCATION: 2007 Graduate School, Doctoral Research Course in Human Culture, Nara Women's University  
2002 Faculty of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Nara Women's University

### SUBJECT OF RESEARCH:

1. Knots and links in 3-manifolds

2. Foliations on knot exterior

3. Categorification of knot invariants and graph polynomials

4. Geometry of Origami

2. Gap of the depths of leaves of foliations

Murai H.

Proceedings of Intelligence of Low Dimensional Topology 2006, Series on Knots and Everything, World Scientific, 40: 223-230 (2007)

### SELECTED PUBLICATIONS:

1. Gap of codimension one foliations

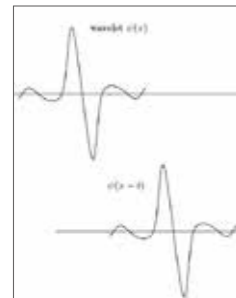
Murai H.

Kobe Journal of Mathematics, 29: 1-24 (2012)

3. Depths of the foliations on 3-manifolds each of which admits exactly one depth 0 leaf

Murai H.

Journal of Knot Theory and its Ramifications, World Scientific, 16(5): 641-669 (2007)



## Fourier analysis, wavelet analysis, and function spaces

MORITOH Shinya / Professor

moritoh (at) cc.nara-wu.ac.jp

EDUCATION: 1993 Graduate School of Mathematical Sciences, The University of Tokyo  
1991 Faculty of Science, The University of Tokyo

ACADEMIC DEGREES: Ph.D. The University of Tokyo

### SUBJECT OF RESEARCH:

Applications of Fourier and wavelet transforms to function spaces

3. Embeddings of Bessel-potential spaces, and Lorentz-Karamata spaces (in Japanese)

Moritoh S.

Proceedings of Symposium on Real Analysis 2011 (Shinshu),

43: 32-36 (2012)

### SELECTED PUBLICATIONS:

1. Detection of singularities in wavelet and ridgelet analyses

Moritoh S.

RIMS Kokyuroku Bessatsu B57: 1-13 (2016)

4. A Further Decay Estimate for the Dziubanski-Hernandez Wavelets

Moritoh S. Tomoeda K.

Canad. Math. Bull. 53: 133-139 (2010)

2. Comparison of integral and discrete Ostrowski's inequalities in the plane

Moritoh S. Tanaka Y.

Math. Inequal. Appl. 18(1): 125-132 (2015)

## Number theory and varieties

OKAZAKI Takeo / Associate Professor

okazaki@cc.nara-wu.ac.jp

EDUCATION: 2004 Graduate School of Science, Osaka University

ACADEMIC DEGREES: Ph.D. Osaka University

### SUBJECT OF RESEARCH:

Automorphic Representation and Number Theory

3.  $L$ -functions of  $SU_3(\Gamma(2,4,8))$

Okazaki T.

J. Number Theory, 132: 54-78 (2012)

### SELECTED PUBLICATIONS:

1. On some Siegel threefold related to the tangent cone of the Fermat quartic surface.

Yamauchi T, Okazaki T.

Advances in Theoretical and Mathematical Physics 21(3) (2017)

4. Saito-Kurokawa type lift to  $SU_3(\Gamma^{\{1,3\}}(2))$

Yamauchi T, Okazaki T.

Math. Ann., 208: 589-601 (2008)

2. Endoscopic lifts to the Siegel modular threefold related to Klein's cubic threefold

Yamauchi T, Okazaki T.

Amer. J. Math., 135(1): 183-206 (2013)

J. Number theory, 125: 117-132 (2007)



## Probabilistic models of statistical mechanics

**SHINODA Masato / Professor**

shinoda@cc.nara-wu.ac.jp

**EDUCATION:** 1994 Graduate School of Mathematical Sciences, The University of Tokyo  
1992 Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

**SUBJECT OF RESEARCH:** percolation on Sierpinski carpet lattices, Shinoda M.  
Critical behaviors of percolation models, phase transition  
Probability Theory and Related Fields, 125: 447-456 (2003)

### SELECTED PUBLICATIONS:

- |  |   |
|--|---|
| <p>1. Uniform spanning trees on Sierpinski graphs<br/>Elmar Teufel, Stephan Wagner, Shinoda M.<br/>Latin American Journal of Probability and Mathematical Statistics, 11(2): 737-780 (2014)</p> <p>2. Optimal strategy for <math>3 \times N</math> AB games<br/>Shinoda M.<br/>IPSJ Journal, 53(6): 1-6 (2012)</p> <p>3. Non-existence of phase transition of oriented</p> | <p>4. Existence of phase transition of percolation on Sierpinski carpet lattices, Shinoda M.<br/>Journal of Applied Probability, 39(1): 1-10 (2002)</p> <p>5. Flexible reward plans for crowdsourced tasks<br/>Sakurai Y, Oyama S, Yokoo M, Shinoda M.<br/>PRIMA 2015: Principles and Practice of Multi-Agent Systems, the series Lecture Notes in Computer Science, 9387: 400-415 (2015)</p> |
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## Probability and stochastic analysis

**TAKEMURA Tomoko / Assistant Professor**

Sm18031@cc.nara-wu.ac.jp

**EDUCATION:** 2010 Graduate School, Doctoral Research Course in Human Culture, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

**SUBJECT OF RESEARCH:** Tomisaki M, Takemura T.  
Probability: stochastic process, limit theorem, skew product diffusion, harmonic transform  
Proc. Japan Acad. Ser. A Math. Sci., 91(1): 9-13 (2015)

### SELECTED PUBLICATIONS:

- |   |  |
|---|--|
| <p>1. Exponent of inverse local time for harmonic transformed process<br/>Tomisaki M, Takemura T.<br/>Ann. Report of Graduate School of Humanities and Sciences Nara Women's University Bulletin of Universities and Institutes Joint, 31: 127-138 (2016/03)</p> <p>2. Asymptotic behavior of Lévy measure density corresponding to inverse local time.</p> | <p>3. Convergence of time changed skew product diffusion processes.<br/>Takemura T.<br/>Potential Anal., 38(1): 31-55 (2013)</p> <p>4. Lévy measure density corresponding to inverse local time<br/>Tomisaki M, Takemura T.<br/>Publ. Res. Inst. Math. Sci., 49(3): 563-599 (2013)</p> |
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## Analytic number theory

**UMEGAKI - ICHIHARA Yumiko / Associate Professor**

ichihara@cc.nara-wu.ac.jp

**EDUCATION:** 2002 Nagoya University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

**SUBJECT OF RESEARCH:** (joint work with Matsumoto K.)  
Number Theory Automorphic L function  
Kyushu J. Math., 62: 201-215 (2008)

### SELECTED PUBLICATIONS:

- |  |   |
|--|---|
| <p>1. The first moment of L-functions of primitive forms on <math>\Gamma_0(p^n)</math> and a basis of old forms.<br/>Journal of Number Theory, 131(2): 343-362 (2011)</p> <p>2. Estimates of a certain sum involving coefficients of cusp forms in weight and level aspects<br/>Lithuanian Math. J., 48(2): 188-202 (2008)</p> <p>3. On the Siegel-Tatuzawa theorem for a class of L-functions</p> | <p>4. On Riesz mean for the coefficients of the twisted Rankin-Selberg L-functions<br/>J. Math. Soc. Japan, 55(1): 81-100 (2003)</p> <p>5. The evaluation of the sum over arithmetic progressions for the coefficients of the Rankin-Selberg series II<br/>Analytic Number Theory (Beijing/Kyoto, 1999), Dev. Math., 6, Kluwer Acad. Publ., Dordrecht, 2002: 173-182 (2002)</p> |
|--|---|



## Study on hyperbolic structures of low-dimensional manifolds

**YAMASHITA Yasushi / Professor**

yamasita@ics.nara-wu.ac.jp

**EDUCATION:** 1991 Graduate School of science and engineering, Tokyo Institute of Technology

**ACADEMIC DEGREES:** Ph.D. Tokyo Institute of Technology

**SUBJECT OF RESEARCH:** DOI: 10.2140/agt.2013.13.927  
Hyperbolic geometry

### SELECTED PUBLICATIONS:

- |   |  |
|---|--|
| <p>1. Non-hyperbolic automatic groups and groups acting on <math>CAT(0)</math> cube complexes<br/>Nakagawa Y, Tamura M, Ymashita Y.<br/>International journal of algebra and computation Academic Journal Joint 24(6): 795-813 (2014/09)<br/>DOI: 10.1142/S0218196714500349</p> <p>2. The link volume of 3-manifolds<br/>Yo'av Rieck, Ymashita Y.<br/>Algebraic and geometric topology 13: 927-958 (2013)</p> | <p>3. Creating software for visualizing Kleinian groups<br/>Ymashita Y.<br/>Lecture Note Ser., IMS, NUS 23: 159-190 (2012)<br/>DOI: 10.1142/9789814401364_0005</p> <p>4. Linear slices of the quasi-Fuchsian space of punctured tori<br/>Komori Y, Yamashita Y.<br/>Conformal geometry and dynamics 16: 89-102 (2012)<br/>DOI: 10.1090/S1088-4173-2012-00237-8</p> |
|---|--|



## Nonlinear PDE and Fluid Mechanics

YANAGISAWA Taku / Professor

taku@cc.nara-wu.ac.jp

**EDUCATION:** 1985 Graduate School of Science, Hokkaido University  
1983 Department of Mathematics, Faculty of Science, Hokkaido University

**ACADEMIC DEGREES:** Ph.D. Hokkaido University

### SUBJECT OF RESEARCH:

1. Hodge decomposition of vector fields and its application to fluid dynamics
2. Free boundary problems in plasma dynamics
3. Initial boundary value problems for symmetric hyperbolic systems
4. Singularities of the solutions to compressible and incompressible Euler equations
5. Stability of boundary layers

### SELECTED PUBLICATIONS:

1. Global compensated compactness theorem for general differential operators of first order  
Kozono H, Yanagisawa T.

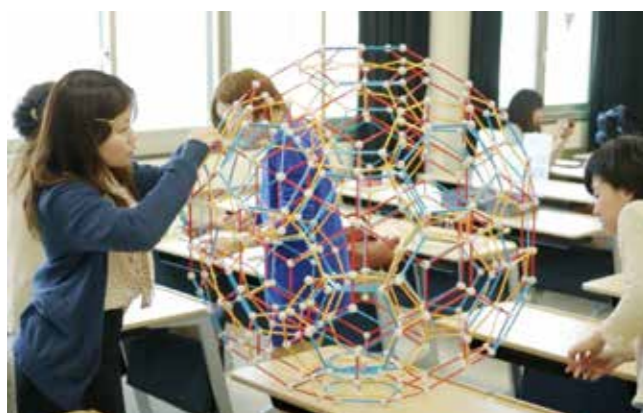
Archive for Rational Mechanics and Analysis, 207(3): 879-905 (2013) DOI: 10.1007/s00205-012-0583-7

2.  $L^r$  Helmholtz Decomposition and Its Application to the Navier-Stokes Equations

Kozono H, Yanagisawa T.

Lectures on Analysis of Nonlinear Partial Differential Equations: Part 3, Morningside Lectures in Mathematics, International Press, 3: 237-290 (2013)

3. Leray's inequality in general multi-connected domains in  $R^n$  Reinhard Farwig, Kozono H, Yanagisawa T.  
Math. Ann., 354: 137-145 (2012)  
DOI: 10.1007/s00208-011-0716-6



## Experimental study of elementary particles using high-energy colliders

HAYASHII Hisaki / Professor

hayashii@cc.nara-wu.ac.jp

**EDUCATION:** 1984 Division of Physics, Graduate School of Science, Nagoya University  
1979 Department of Physics, Faculty of Science, Shizuoka University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

### SUBJECT OF RESEARCH:

1. Lepton flavor violating tau decays for New physics searches
2. CP violation in tau-lepton hadronic decays
3. Hadronic structure function, quark confinement, strange quark mass, muon anomalous magnetic moment, Holography
4. CP violation in B and D mesons
5. Experimental study of particle physics using high energy  $e^+e^-$  colliders

### SELECTED PUBLICATIONS:

1. The Physics of B Factories (tau lepton chapter)  
Hayashii H, Belle and BaBar collab.  
Europ. Phys. Jour. C, 74 (3026): 1-928 (2014)
2. Search for CP violation in  $\tau^- \rightarrow K^0 \pi^+ \nu_\tau$  decays  
Bschfberger M, Hayashii H, Belle collab.  
Phys. Rev. Lett., 107 (131801): 1-4 (2011)
3. High statistic study of the  $\tau^- \rightarrow \pi^+ \pi^0 \nu_\tau$  decay  
Fujikawa M, Hayashii H, Belle collab.  
Phys. Rev. D, 86(092007): 1-38 (2008)



## Theoretical study of strongly interacting systems of hadrons and nuclei

HIRENZAKI Satoru / Professor

zaki@cc.nara-wu.ac.jp

**EDUCATION:** 1991 Division of Physics, Graduate School of Science, Tokyo Metropolitan University  
1986 Department of Physics, Faculty of Science, Science University of Tokyo

**ACADEMIC DEGREES:** Ph.D. Tokyo Metropolitan University

### SUBJECT OF RESEARCH:

1. Structure and Formation of Meson-Nucleus bound systems
2. Hadron reactions at Intermediate and High energy regions

Phys. Rev. Lett., 94: 232503 (2005)

3. (d,  $^3\text{He}$ ) reactions for the formation of deeply bound pionic atoms

Hirenzaki S, Toki H, Yamazaki T.  
Phys. Rev. C, 44: 2472-2479 (1991)

### SELECTED PUBLICATIONS:

1. Deeply bound pionic states in heavy nuclei  
Yamazaki T, Hirenzaki S, Hayano R S, Toki H.  
Phys. Report, 514: 1 (2012)

4. Structure and Formation of Deeply Bound Pionic Atoms

Toki H, Hirenzaki S, Yamazaki T, Hayano R S.  
Nucl. Phys. A, 501: 653-671 (1989)

2. Formation of eta-prime(958) - mesic nuclei and axial  $U(A)(1)$  anomaly at finite density  
Nagahiro H, Hirenzaki S.



## Experimental study for atomic collisions of singly and multiply charged ions over wide energy ranges from eV to MeV

ISHII Kunikazu / Associate Professor

ishii@cc.nara-wu.ac.jp

EDUCATION: 2002 Graduate School of Science, Tokyo Metropolitan University

ACADEMIC DEGREES: Ph.D. Tokyo Metropolitan University

### SUBJECT OF RESEARCH:

1. Collision dynamics by low energy highly charged ion
2. Basic and applied studies of MeV energy ions

Hirano Y, Umigishi M, Ishii K, Ogawa H.

Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms B, 354: 67 (2014)

### SELECTED PUBLICATIONS:

1. Energy distribution of an ion beam extracted into air with a large bore metal capillary

Umigishi M, Hirano Y, Ishii K, Ogawa H.

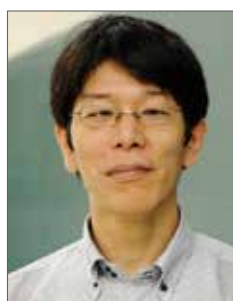
Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms B, 354: 64 (2014)

3. Development of an in-air RBS technique using a metal capillary

Ishii K, Fujita N, Ogawa H.

Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms B, 269: 1026 (2011)

2. Measurements of an ion beam diameter extracted into air through a large-bore metal capillary



## Study of deformation and fracture of soft materials and pattern formation

KITSUNEZAKI So / Associate Professor

kitsune@ki-rin.phys.nara-wu.ac.jp

EDUCATION: 1997 Graduate School of Science, Kyoto University  
1992 Faculty of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Pattern Formation of Microorganisms
2. Dynamics of Granular Materials
3. Deformation and Fracture of Soft Materials

Tarafdar S.

Wiely, ISBN: 978-3-527-41213-6 (2015)

### SELECTED PUBLICATIONS:

1. Shaking-induced stress anisotropy in the memory effect of paste

Kitsunezaki S, Nakahara A, Matsuo Y.

Europhys. Lett., 114: 64002 (2016)

3. Cracking Condition of Cohesionless Porous Materials in Drying Processes

Kitsunezaki S.

Physical Review E, 87: 052805 (2013)

2. Desiccation Cracks and their Patterns: Formation and Modelling in Science and Nature.

Lucas Goehring, Nakahara A, Dutta T, Kitsunezaki S,

4. Bioconvection and front formation of *Paramecium tetraurelia*

Kitsunezaki S, Komori R, Harumoto T.

Physical Review E, 76: 046301 (2007)



## Opacity of hot dense plasmas based on time-dependent density functional theory; Atomic processes and electronic structures of ions in dense plasmas in external, strong magnetic fields

KIYOKAWA Shuji / Associate Professor / sk@cc.nara-wu.ac.jp

EDUCATION: Tokyo Institute of Technology

ACADEMIC DEGREES: Ph.D. Tokyo Institute of Technology

### SUBJECT OF RESEARCH:

Properties of Strongly coupled plasmas strongly coupled plasmas density functional theory

3. Correspondence between Phase Oscillator Network and Classical XY Model with the Same Infinite-Range Interaction in Statics

Uezu T, Kimoto T, Kiyokawa S, Okada M.

Journal of the Physical Society of Japan, 84: 033001 (2015)

### SELECTED PUBLICATIONS:

1. Multi-average ion model for hot dense plasmas derived from finite temperature density-functional theory Kiyokawa S.

High Energy Density Physics 13: 40 (2014)

2. Exact solution to the Coulomb wave using the linearized phase-amplitude method

Kiyokawa S.

AIP Advances, 5(8): 087150 (2015)

## Experimental study of magnetism and metal physics

MATSUOKA Yuki / Associate Professor

matsuoka@cc.nara-wu.ac.jp

EDUCATION: 1998 Division of Physics, Graduate School of Science, Tohoku University

ACADEMIC DEGREES: Ph.D. Tohoku University

### SUBJECT OF RESEARCH:

1. The phase stability of noble metal martensitic alloy
2. Research of the effect of mugineic acid on Soil, ESR/EPR, Fe<sup>3+</sup> mineral
3. ESR measurement of pottery and potter's clay, ESR, Bizen-pottery, clay, color, Fe<sup>3+</sup>

### SELECTED PUBLICATIONS:

1. Composition dependence of the phase stability in Au-Cd-Ag martensitic alloy

Matsuoka Y, Fujita M, Nagahara A.

Materials Today Proceeding, 2S: S573-S576 (2015)

2. Size effect for phase stability on Au-Cd-Ag of phase boundary composition

Matsuoka Y, Suzuki K, Kudo N.

Journal of Alloys and Compounds, 577S: S521 - S524 (2012)



## Elementary particle physics experiments, especially CP violation, heavy-flavored hadron spectroscopy, and particle detector development

**MIYABAYASHI Kenkichi / Professor**

**miyabaya@cc.nara-wu.ac.jp**

**EDUCATION:** 1994 Graduate School of Science, Nagoya University  
1990 Faculty of Science, Nagoya University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

### SUBJECT OF RESEARCH:

1. Study of CP violation in B meson decays at high luminosity asymmetric-energy  $e^+e^-$  collider
2. Heavy-flavored hadron spectroscopy at B-factory experiment
3. Research and development of inorganic scintillator based electromagnetic calorimeter
4. Beam background monitoring for high luminosity  $e^+e^-$  collider

Iwashita T, Miyabayashi K. et al. (The Belle Collaboration),  
PTEP, 2014: 043C01 (2014)

2. Evidence of a new narrow resonance decaying to  $\chi_{c1}\gamma K$  in  $B \rightarrow \chi_{c1}\gamma K$   
Bhardwaj V, Miyabayashi K. et al. (The Belle Collaboration),  
Phys. Rev. Lett., 111: 032001 (2013)

### SELECTED PUBLICATIONS:

1. Measurement of branching fractions for  $B \rightarrow J/\psi \eta K$  decays and search for a narrow resonance in the  $J/\psi \eta$  final state

3. Precise measurement of the CP violation parameter  $\sin 2\phi_1$  in  $B^0 \rightarrow (cc)K^0$  decays  
Adachi I, Miyabayashi K. et al. (The Belle Collaboration),  
Phys. Rev. Lett., 108: 171801 (2012)



## Theoretical study for the structures and properties of hadrons

**NAGAIRO Hideko / Associate Professor**

**nagahiro@cc.nara-wu.ac.jp**

**EDUCATION:** 2001 Graduate School, Doctoral Research Course in Human Culture, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

### SUBJECT OF RESEARCH:

1. Natures of hadrons (structure, mass generation, decay properties)
2.  $\eta, \eta'(958)$  mesic nuclei and chiral symmetry

$\eta$ -PRiME/Super-FRS Collaboration (Tanaka Y K. et al.)  
(American Physical Society) Phys. Rev. Lett., 117:  
202501. (2016)

3. Elementarity of composite systems  
Nagahiro H, Hosaka A.

### SELECTED PUBLICATIONS:

1. Structure of charmed baryons studied by pionic decays  
Nagahiro H, Yasui S, Hosaka A, Oka M, Nouri H.  
(American Physical Society) Phys. Rev. D, 95: 014023  
(2017)

(American Physical Society) Phys. Rev. C, 90: 065201  
(2014)

4. Composite and elementary nature of a resonance in the sigma model,  
Nagahiro H, Hosaka A.

2. Measurement of excitation spectra in the  $^{12}C(p,d)$  reaction near  $\eta'$  emission threshold

(as Editors' Suggestion) Phys. Rev. C, 88: 055203 (2013)



## Experimental research on ion-atom and ion-solid collisions

**OGAWA Hidemi / Professor**

**ogawa@cc.nara-wu.ac.jp**

**EDUCATION:** 1984 Graduate School of Science, Kyoto University  
1979 Faculty of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Secondary electron emission from thin film by ion and neutral beam irradiation
2. Energy losses and charge exchanges of high velocity heavy ions in solid and gas targets

Umigishi M, Hirano Y, Ishii K, Ogawa H.  
Nucl. Instr. Meth. B, 354: 64-66 (2015)

3. Measurements of an ion beam diameter extracted into air through a large-bore metal capillary.  
Hirano Y, Umigishi M, Ishii K, Ogawa H.  
Nucl. Instr. Meth. B, 354: 67-70 (2015)

### SELECTED PUBLICATIONS:

1. Number distribution of emitted electrons by MeV  $H^+$  impact on carbon,  
Koyanagi Y, Hongo N, Ishii K, Kaneko T, Ogawa H.  
Nucl. Instr. Meth. B. to be published
2. Energy distribution of an ion beam extracted into air with a large bore metal capillary.

4. Forward-backward correlated secondary electron emission depending on the emergent-angle of protons transmitted a thin carbon foil.  
Sorai K, Amano S, Ishii K, Kaneko T, Ogawa H.  
J. Phys. B:Atomic, Molecular & Optical Physics, 47:  
085201 (2014)



## Theoretical study of particle phenomenology and dynamics of quantum gauge theories

**OHKI Hiroshi / Assistant Professor**

**hohki@cc.nara-wu.ac.jp**

**EDUCATION:** 2010 Division of Physics and Astronomy, Graduate School of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Study of Particle Phenomenology
2. Lattice gauge Theory
3. Numerical Simulation of Lattice Quantum Chromo Dynamics
4. String Phenomenology
5. Non-perturbative dynamics of the quantum gauge theory

Springer, 978-3-642-30804-8 (2012)

2. Light composite scalar in twelve-flavor QCD on the lattice  
Aoki Y, Aoyama T, Kurachi M, Maskawa T, Nagai K -i, Ohki H, Rinaldi E, Shibata A, Yamawaki K, Yamazaki T.  
Phys. Rev. Lett., 111(162001): 1-5 (2013)

### SELECTED PUBLICATIONS:

1. An introduction to non-Abelian discrete symmetries for particle physicists  
Ishimori H, Kobayashi T, Ohki H, Okada H, Shimizu Y, Tanimoto M,

3. Nucleon strange quark content from  $N_f = 2 + 1$  lattice QCD with exact chiral symmetry  
Ohki H, Takeda T, Aoki S, Hashimoto S, Kaneko T, Matsufuru H, Noaki J, Onogi T.  
Phys. Rev. D, 87(034509): 1-13 (2013)





## Observational study of galaxy clusters and the structure formation in the universe; Development of high-resolution X-ray microcalorimeters

**OTA Naomi / Associate Professor**

**naomi@cc.nara-wu.ac.jp**

**EDUCATION:** 2001 Division of Physics, Graduate School of Science, The University of Tokyo  
1996 Department of Physics, Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

### SUBJECT OF RESEARCH:

1. Observational study of structure and evolution of galaxy clusters in the universe
2. Development of high-resolution X-ray microcalorimeters

Ota N, Yoshida H.

Publications of the Astronomical Society of Japan, 68(SP1) id. S19 (2016)

3. Investigation of the hard X-ray emission from the hottest cluster A2163 with Suzaku

### SELECTED PUBLICATIONS:

1. The quiescent intracluster medium in the core of the Perseus cluster  
Hitomi Collaboration.  
Nature, 535 (7610): 117-121 (2016)
2. Search for gas bulk motions in eight nearby clusters of galaxies with Suzaku

Ota N, Nagayoshi K, Pratt G W, Kitayama T, Oshima T, Reiprich T H.

Astronomy & Astrophysics, 562 id. A60 (2014)

4. X-ray spectroscopy of clusters of galaxies  
Ota N.

Research in Astronomy & Astrophysics, 12(8): 973-994 (2012)



## Experimental study of quark gluon plasma (QGP) created by high-energy heavy ion collisions

**SHIMOMURA Maya / Assistant Professor / maya@cc.nara-wu.ac.jp**

**EDUCATION:** 2004,2009 Physics, Graduate School of Pure and Applied Sciences, University of Tsukuba  
2002 Physics, Faculty of Science, Nara Women's University  
2001 Physics and Astronomy, Liberal Arts and Sciences, Iowa State University

**ACADEMIC DEGREES:** Ph.D. University of Tsukuba

### SUBJECT OF RESEARCH:

The boundary condition of the produced QGP matter by measuring azimuthal anisotropy in relativistic heavy ion collisions at RHIC-(s)PHENIX and LHC-ALICE

and bottom hadron decays in Au+Au collisions at  $\sqrt{s_{NN}}=200$  GeV

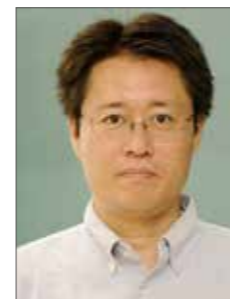
A. Adare et al. (PHENIX Collaboration)  
Phys. Rev. C, 93(3): 034904 (2016)  
DOI: 10.1103/PhysRevC.93.034904

### SELECTED PUBLICATIONS:

1. Measurement of the higher-order anisotropic flow coefficients for identified hadrons in Au + Au collisions at  $\sqrt{s_{NN}}=200$ GeV  
A. Adare et al. (PHENIX Collaboration)  
Phys. Rev. C, 93(5): 051902 (2016)  
DOI: 10.1103/PhysRevC.93.051902

3. Systematic Study of Azimuthal Anisotropy in Cu+Cu and Au+Au Collisions at  $\sqrt{s_{NN}}=62.4$  and 200GeV  
A. Adare et al. (PHENIX Collaboration)  
Phys.Rev.C, 92(3): 034913 (2015)  
DOI: 10.1103/PhysRevC.92.034914

2. Single electron yields from semileptonic charm



## String, string field, quantum field, and unified theories

**TAKAHASHI Tomohiko / Associate Professor**

**tomo@cc.nara-wu.ac.jp**

**EDUCATION:** 1997 Division of Physics and Astronomy, Graduate School of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

String particle physics field theory

3. Comments on observables for identity-based marginal solutions in Berkovits' superstring field theory  
Kishimoto I, Takahashi T.

### SELECTED PUBLICATIONS:

1. Open String Feilds as Matrices  
Kishimoto I, Masuda T, Takahashi T, Takemoto S.  
Prog Theor Exp Phys, 2015(3): 033B05 (2015)  
DOI: 10.1093/ptep/ptv023
2. Observables for identity-based tachyon vacuum solutions  
Kishimoto I, Masuda T, Takahashi T.  
Prog Theor Exp Phys, 2014(10): 103B02 (2014)  
DOI: 10.1093/ptep/ptu136

J. High Energy Phys., 2014:31 (2014)  
DOI: 10.1007/JHEP07(2014)031

4. Gauge invariant overlaps for identity-based marginal solutions  
Kishimoto I, Takahashi T.  
Prog Theor Exp Phys, 2013(9): 093B07 (2013)  
DOI: 10.1093/ptep/ptt073



## Theoretical study of nonequilibrium dynamics in quantum systems, biomolecules, chemical reactions, and social systems

**TODA Mikito / Associate Professor**

**toda@ki-rin.phys.nara-wu.ac.jp**

**EDUCATION:** 1987 Division of Physics and Astronomy, Graduate School of Science, Kyoto University  
1980 Department of Applied Physics, School of Engineering, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Quantum Mechanics of Non-Integrable Systems  
Quantum Chaos, Quantum Entanglement, Origin of Irreversibility
2. Dynamical Process of Chemical Reaction Chaos, Transition State Theory, Time Series Analysis of Biomolecules
3. Social Physics Complex networks, Statistical Analysis of Social Network Systems

Teramoto H, Toda M, Takahashi M, Kono H, Komatsuzaki T.  
Phys Rev Lett, 115: 093003(5 pages)(2015)  
DOI: 10.1103/PhysRevLett.115.093003

### SELECTED PUBLICATIONS:

1. Mechanism and Experimental Observability of Global Switching Between Reactive and Nonreactive Coordinates at High Total Energies

2. Breakdown Mechanisms of Normally Hyperbolic Invariant Manifolds in terms of Unstable Periodic Orbits and Homoclinic/Heteroclinic Orbits in Hamiltonian Systems  
Teramoto H, Toda M, Komatsuzaki T.  
Nonlinearity, 28: 2677-2698 (2015)



### Theoretical study of correlation effects in condensed-matter systems

**TSUCHIIZU Masahisa / Associate Professor**

**tsuchiiz@cc.nara-wu.ac.jp**

**EDUCATION:** 2001 Graduate School of Science, Nagoya University  
1996 Faculty of Science, Nagoya University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

#### SUBJECT OF RESEARCH:

1. Strong correlations in two-dimensional electron systems
2. Electronic correlations in molecular conductors
3. Charge ordering in one-dimensional electron systems

2. Multi-Orbital Molecular Compound (TTM-TTP)<sub>3</sub>: Effective Model and Fragment Decomposition  
Tsuchiizu M, et al.

J. Phys. Soc. Jpn. 80: 013703 (2011)

3. Interchain-Frustration-Induced Metallic State in Quasi-One-Dimensional Mott Insulators

Tsuchiizu M, Suzumura Y, Bourbonnais C.

Phys. Rev. Lett. 99: 126404 (2007)

4. Phase Diagram of One-Dimensional Extended Hubbard Model at Half Filling

Tsuchiizu M, Furusaki A.

Phys. Rev. Lett. 88: 056402 (2002)

#### SELECTED PUBLICATIONS:

1. Orbital Nematic Instability in the Two-Orbital Hubbard model: Renormalization-Group + Constrained RPA Analysis

Tsuchiizu M, et al.

Phys. Rev. Lett. 111: 057003 (2013)



### Unification theory of phase transitions in phase oscillator networks and the classical XY model; Theoretical study of phase transitions in phase oscillator networks and the classical XY model with various interactions

**UEZU Tatsuya / Professor / uezu@ki-rin.phys.nara-wu.ac.jp**

**EDUCATION:** 1983 Graduate School of Science, Kyoto University  
1978 Faculty of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

#### SUBJECT OF RESEARCH:

1. Synchronization phenomena Phase oscillator networks, Kuramoto model
2. Correspondence between phase oscillator networks and the classical XY model with the same infinite-range interaction Phase transition, Critical phenomena
3. Statistical mechanical study on disordered systems and neural networks Neural networks, Spin glasses, Replica method, Learning

Architecture ---

Uezu T, Kiyokawa S.

J. Phys. Soc. Jpn., 85(6): 064001 (1 – 31) (2016)

2. Correspondence between phase oscillator network and classical XY model with the same infinite-range interaction in statics

Uezu T, Kimoto T, Kiyokawa S, Okada M.

J. Phys. Soc. Jpn., 84(3): 033001 -1 -- 033001 -5 (2015)

#### SELECTED PUBLICATIONS:

1. Supervised Learning of Two-Layer Perceptron under the Existence of External Noise --- Learning Curve of Boolean Functions of Two Variables in Tree-Like

3. Unlearning of Mixed States in the Hopfield Model -- Finite Loading Case --

Ohtani H, Yoshida M, Kiyokawa S, Uezu T.

J. Phys. Soc. Jpn., 84(1): 014002 -1 -- 014002 -17 (2015)



### Experimental study of crystal structures and physical properties of quasicrystals and intercalated layered materials

**YAMAMOTO Kazuki / Associate Professor / kazuki.yamamoto@cc.nara-wu.ac.jp**

**EDUCATION:** 1994 Graduate School of Engineering, University of Tsukuba  
1991 Graduate School of Science, Niigata University

**ACADEMIC DEGREES:** Ph.D. University of Tsukuba

#### SUBJECT OF RESEARCH:

1. X-ray Study of Electron Density Distributions in Crystals.
2. X-ray Study of Structure for Quasicrystals.
3. X-ray Study of Structure for Intercalated Layered Materials.

strains in a Co-rich Al-Ni-Co decagonal phase

Yamamoto K, Yang W, Nishimura Y, Matsuo Y.  
Materials Transactions, 45(4): 1225-1260 (2004)

3. Structure of an Al-Cu-Co Decagonal Quasicrystal Studied by Cs-Corrected STEM

Yubuta K, Yamamoto K, Yasuhara A, Hiraga K.

Material Transaction, 55(6): 866-870 (2014)

#### SELECTED PUBLICATIONS:

1. X-ray study of the electron density distribution for Al<sub>6</sub>Mn, Yamamoto K, Matsuo Y.

Journal of Physics: Condensed Matter, 12(11): 2359-2365 (2000)

4. The structure of an Al-Rh-Cu decagonal quasicrystal studied by spherical aberration (Cs)-corrected scanning transmission electron microscopy

Yubuta K, Yamamoto K, Yasuhara A, Hiraga K.

Philosophical Magazine, 95: 1524–1535 (2015)



### Observational study of high-energy phenomena with X-ray satellites

**YAMAUCHI Shigeo / Professor**

**yamauchi@cc.nara-wu.ac.jp**

**EDUCATION:** 1991 Division of Astrophysics, Graduate School of Science, Nagoya University  
1987 Department of Physics, Faculty of Science, Nagoya University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

#### SUBJECT OF RESEARCH:

1. Origin of the Galactic Diffuse X-ray Emission
2. Evolution of Supernova Remnants

Koyama K.

Publications of the Astronomical Society of Japan, 68(4): 59 (2016)

#### SELECTED PUBLICATIONS:

1. Origin of the Galactic Diffuse X-Ray Emission: Iron K-shell Line Diagnostics  
Nobukawa M, Uchiyama H, Nobukawa K K, Yamauchi S, Koyama K.  
The Astrophysical Journal, 833(2): 268 (2016)

3. The quiet intracluster medium in the core of the Perseus cluster

The Hitomi collaboration  
Nature, 535: 117-121 (2016)

2. Scale heights and equivalent widths of the iron K-shell lines in the Galactic diffuse X-ray emission  
Yamauchi S, Nobukawa K K, Nobukawa M, Uchiyama H,

4. Iron emission line from the spiral galaxy M101  
Yamauchi S.

Publications of the Astronomical Society of Japan, 68(SP1): S18 (2016)



## Theoretical study of highly correlated low-dimensional electron systems

YOSHIOKA Hideo / Professor

h-yoshi@cc.nara-wu.ac.jp

EDUCATION: 1993 Graduate School of Science, The University of Tokyo  
1988 Faculty of Science, Nagoya University

ACADEMIC DEGREES: Ph.D. The University of Tokyo

### SUBJECT OF RESEARCH:

1. Theoretical Study on Quasi-One-Dimensional Organic Conductors
2. Electronic Correlation in Carbon Nanotubes
3. Theoretical Study on Strongly Correlated One-Dimensional Electron System

2. Phase competition, solitons, and domain walls in neutral-ionic transition systems

Tsuchiizu M, Yoshioka H, Seo H.

J. Phys. Soc. Jpn., 85: 104705(10 Pages) (2016)

DOI: 10.7566/JPSJ.85.104705

3. Enhancement of charge ordering by zeeman effect in one-dimensional molecular conductors

Yoshioka H, Seo H, Otsuka Y.

Journal of the Korean Physical Society, 63(3): 383-386 (2013)

DOI: 10.3938/jkps.63.383

### SELECTED PUBLICATIONS:

1. Tomonaga-Luttinger liquid theory for metallic fullurene polymers

Yoshioka H, Shima H, Noda Y, Ono S, Ohno K.

Physical Review B, 93: 165431 (2016)

DOI: 10.1103/PhysRevB.93.165431



## Elucidation of molecular mechanism between structure and function of metalloproteins and metalloenzymes

FUJII Hiroshi / Professor

fujii@cc.nara-wu.ac.jp

EDUCATION: 1990 Graduate School of Engineering Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

Reactivity and selectivity of metalloenzymes relating to biological oxidation reactions

Matsui T, Nambu S, Celia W. Goulding, Takahashi S, Fujii H, Ikeda- Saito M.

Proc. Natl. Acad. Sci., 113: 3779-3784 (2016)

### SELECTED PUBLICATIONS:

1. Participation of Electron Transfer Process in Rate-Limiting Step of Aromatic Hydroxylation Reactions by Compound I Models of Heme Enzymes

Asaka M, Fujii H.

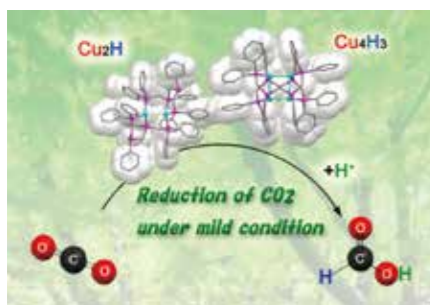
J. Am. Chem. Soc., 138: 8048-8051 (2016)

3. The Functional Role of the structure of the Dioxo-isobacteriochlorin Structure in the Catalytic Site of Cytochrome cd1 for the Reduction of Nitrite

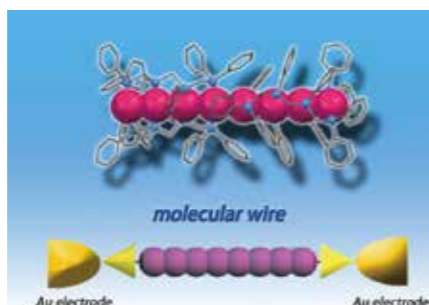
Fujii H, Yamaki D, Ogura T, Hada M.

Chem. Sci., 7: 2896-2906 (2016)

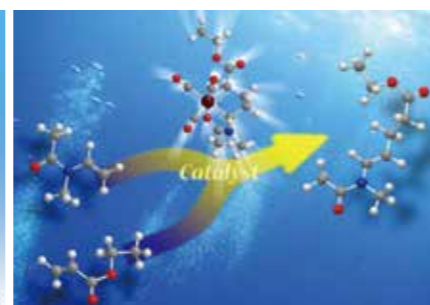
2. Unique coupling of mono- and dioxygenase chemistries in a single active site promotes heme degradation



Fixation of CO<sub>2</sub> by copper hydride complexes.



Creation of transition metal molecular wires.



Environmental load-reducing catalytic organic transformation reactions.



## Research on catalytic mechanisms of metalloenzymes and metalloproteins

HONDA Yuki / Assistant Professor

honda@cc.nara-wu.ac.jp

EDUCATION: 2012 Major in Applied Chemistry, Graduate School of Advanced Science and Engineering, Waseda University

ACADEMIC DEGREES: Ph.D. Waseda University

### SUBJECT OF RESEARCH:

Biochemistry, Bioinorganic Chemistry

Honda Y, Zang Q, Shimizu Y, Dadashpour M, Zhang Z, Kawarabayasi Y.

Appl. Environ. Microbiol., 83: e02291-16 (2017).

DOI: 10.1128/AEM.02291-16

### SELECTED PUBLICATIONS:

1. Inorganic/whole-cell Biohybrid Photocatalyst for Highly Efficient Hydrogen Production from Water

Honda Y, Watanabe M, Hagiwara H, Ida S, Ishihara T.

Appl. Catal. B Environ., 210: 400-406 (2017)

DOI: 10.1016/j.apcatb.2017.04.015

3. Application to Photocatalytic H<sub>2</sub> Production of a Whole-cell Reaction by Recombinant *Escherichia coli* Cells Expressing [FeFe]-hydrogenase and Maturases Genes

Honda Y, Hagiwara H, Ida H, Ishihara T

Angew. Chem. Int. Ed., 55: 8045-8048 (2016).

DOI: 10.1002/anie.201600177

2. Increasing the Thermostable Sugar-1-phosphate Nucleotidyltransferase Activities of Archaeal ST0452 Protein through Site-saturation Mutagenesis of the 97th Amino Acid Position



## Research on the physical properties of nano-sized metal complexes in a solid state

**KAJIWARA Takashi / Professor**

**kajiwara@cc.nara-wu.ac.jp**

**EDUCATION:** 2000 Graduate School of Science, Tohoku University

**ACADEMIC DEGREES:** Ph.D. Tohoku University

### SUBJECT OF RESEARCH:

Magnetochemistry of lanthanide-based metal complexes

Magnetochemistry, 2(4): 43 (2016)

DOI: 10.3390/magnetochemistry2040043

### SELECTED PUBLICATIONS:

1. Light Lanthanide Complexes with Crown Ether and Its Aza Derivative Which Show Slow Magnetic Relaxation Behaviors

Wada H, Ooka S, Yamamura T, Kajiwara T.

Inorg. Chem., 56(1): 147-155 (2017)

DOI: 10.1021/acs.inorgchem.6b01764

3. Structural switching from paramagnetic to single-molecule magnet behaviour of LnZn<sub>2</sub> trinuclear complexes

Poh Ling Then, Takehara C, Kataoka Y, Nakano M, Yamamura T, Kajiwara T.

Dalton Trans., 44: 18038-18048 (2015)

DOI: 10.1039/C5DT02965A

2. Slow Magnetic Relaxation of Lanthanide(III) Complexes with a Helical Ligand

Wada H, Ooka S, Iwasawa D, Hasegawa M, Kajiwara T.



## Design and synthesis of high-performance transition metal complex catalysts and development of novel environmentally friendly synthetic organic reactions

**KATAOKA Yasutaka / Professor / kataoka@cc.nara-wu.ac.jp**

**EDUCATION:** 1992 Graduate School of Engineering, Kyoto University

1987 Faculty of Engineering, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Synthetic Organic Chemistry

2. Organometallic Chemistry

Acids

Shimokawa R, Kawada Y, Hayashi M, Kataoka Y, Ura Y.

Dalton Trans., 45: 16112-16116 (2016)

### SELECTED PUBLICATIONS:

1. Palladium-catalyzed Aerobic Synthesis of Terminal Acetals from Vinylarenes Assisted by pi-Acceptor Ligands

Matsumura S, Sato R, Nakaoka S, Yokotani W, Murakami Y, Kataoka Y, Ura Y.

ChemCatChem, 9: 751-757 (2017)

3. Maleimide-assisted Anti-Markovnikov Wacker-type Oxidation of Vinylarenes Using Molecular Oxygen as a Terminal Oxidant

Nakaoka S, Murakami Y, Kataoka Y, Ura Y.

Chem. Commun., 52: 335-338 (2016)

2. Oxygenation of a Benzyl Ligand in SNS-Palladium Complexes with O<sub>2</sub>: Acceleration by Anions or Brønsted



## Study of molecular recognition/sensing with luminescent lanthanide complexes and their luminescent properties

**KATAOKA Yumiko / Assistant Professor**

**ykataoka@cc.nara-wu.ac.jp**

**EDUCATION:** Osaka City University

**ACADEMIC DEGREES:** Ph.D. Osaka City University

### SUBJECT OF RESEARCH:

1. Luminescent Lanthanide Complexes

2. Luminescent Sensors with Lanthanide complexes

Poh Ling Then, Takehara C, Kataoka Y, Nakano M, Yamamura T, Kajiwara T.

Dalton Trans., 44: 18038-18048 (2015)

### SELECTED PUBLICATIONS:

1. Slow Magnetic relaxation of Light Lanthanide-Based Liner LnZn<sub>2</sub> Trinuclear Complexes

Takehara C, Poh Ling Then, Kataoka Y, Nakano M, Yamamura T, Kajiwara T.

Dalton Trans., 44: 18276-18283 (2015)

3. SMM Behavior Observed in Ce(III)Zn(II)<sub>2</sub> Linear Trinuclear Complex

Hino S, Maeda M, Kataoka Y, Nakano M, Yamamura T, Kajiwara T.

Chem. Lett., 42: 1276-1278 (2013)

2. Structural Switching from Paramagnetic to Single-Molecule Magnet Behaviour of LnZn<sub>2</sub> Trinuclear Complexes



## Classical and quantum molecular simulations aiming at a priori design and investigation of physical properties of molecular ensembles and condensed matter

**KINUGAWA Kenichi / Professor / kinugawa@cc.nara-wu.ac.jp**

**EDUCATION:** 1988 Graduate School of Engineering, Kyoto University

1986 Faculty of Engineering, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

Classical and quantum molecular simulations aiming at a priori design and investigation of physical properties of molecular ensembles and condensed matter

Imaoka H, Kinugawa K.

Chem. Phys. Lett., 671: 174 (2017)

### SELECTED PUBLICATIONS:

1. Path integral centroid molecular dynamics simulation of para-hydrogen sandwiched by graphene sheets

Minamino Y, Kinugawa K.

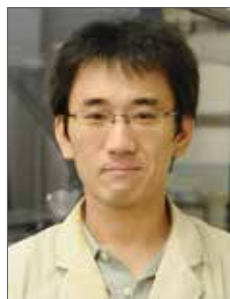
Chem. Phys. Lett., 664: 114 (2016)

3. Quantum effects on liquid dynamics as evidenced by the presence of well-defined collective excitations in liquid para-hydrogen

F. J. Bermejo, Kinugawa K, C. Cabrillo, S. M. Benington, B. Fák, M. T. Fernández-Díaz, P. Verkerk, J. Dawidowski, R. Fernández-Perea.

Phys. Rev. Lett., 84: 5359 (2000)

2. Transport coefficients of normal liquid helium-4 calculated by path integral centroid molecular dynamics simulation



## Bioorganometallic chemistry based on bi- and multinuclear complexes

**KURE Bunsyo / Assistant Professor**

**kure@cc.nara-wu.ac.jp**

**EDUCATION:** 2008 Division of Material and Life Science, Graduate School of Engineering, Osaka University  
2005 Graduate School of Engineering, Osaka University

**ACADEMIC DEGREES:** Ph.D. Osaka University

### SUBJECT OF RESEARCH:

Bio-organometallic Chemistry

### SELECTED PUBLICATIONS:

1. Self-alignment of low-valent octanuclear palladium atoms

Nakamae K, Takemura Y, Kure B, Nakajima T, Kitagawa Y, Tanase T.

Angew. Chem., Int. Ed., 54: 1016-1021 (2015)

2. Tetranuclear nickel and cobalt complexes with an incomplete double-cubane structure - Homo- and heterometallic complexes and their 1D coordination polymers

Nakajima T, Seto K, Andreas Scheurer, Kure B, Kajiwara T, Tanase T, Mikuriya M, Sakiyama H.

European Journal of Inorganic Chemistry, 5021-5033 (2014)

3. Facile insertion of carbon dioxide into Cu<sub>2</sub>(μ-H) dinuclear units supported by tetraphosphine ligands

Nakamae K, Kure B, Nakajima T, Tanase T.

Chemistry an Asian Journal, 9: 3106-3110 (2014)



## Research on molecular chirality and organic synthesis using organometallic reagents

**MATSUMOTO Arimasa / Assistant Professor**

**a-matsumoto@cc.nara-wu.ac.jp**

**EDUCATION:** 2012 Graduate School of Science, The University of Tokyo  
2007 Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

### SUBJECT OF RESEARCH:

Organometallic Chemistry, Chirality

### SELECTED PUBLICATIONS:

1. Achiral Inorganic Gypsum Acts as an Origin of Chirality through Its Enantiotopic Surface in Conjunction with Asymmetric Autocatalysis

Matsumoto A, Kaimori Y, Uchida M, Omori H, Kawasaki T, Soai K.

Angew. Chem. Int. Ed., 56: 545-548 (2017)

DOI:10.1002/anie.201610099

2. Asymmetric Induction by Nitrogen <sup>14</sup>N/<sup>15</sup>N Isotopomer in Conjunction with Asymmetric Autocatalysis

Matsumoto A, Ozaki H, Harada S, Tada K, Ayugase T, Ozawa H, Kawasaki T, Soai K.

Angew. Chem. Int. Ed., 55: 15246-15249 (2016)

DOI:10.1002/anie.201608955

3. Crystal Structure of Isopropylzinc Alkoxide of Pyrimidyl Alkanol: Mechanistic Insights for Asymmetric Autocatalysis with Amplification of Enantiomeric Excess

Matsumoto A, Abe T, Hara A, Tobita T, Sasagawa T, Kawasaki T, Soai K.

Angew. Chem. Int. Ed., 54: 15218-15221 (2015)

DOI: 10.1002/anie.201508036



## Synthetic studies of small molecules with bioactivity and analyses of their function

**MIKATA Yuji / Professor**

**mikata@cc.nara-wu.ac.jp**

**EDUCATION:** 1993 Graduate School of Science, Kyoto University  
1988 Faculty of Science, Kobe University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Fluorescent Sensors for Zinc, Cadmium, Mercury, Pyrophosphate

2. Enzyme models, Coenzyme models

3. Carbohydrate-Based Metal Complexes

### SELECTED PUBLICATIONS:

1. Replacement of quinolines with isoquinolines affords target metal ion switching from Zn<sup>2+</sup> to Cd<sup>2+</sup> in the fluorescent sensor TQLN

(*N,N,N',N'*-tetrakis (2-quinolylmethyl)-2, 6-bis (aminomethyl) pyridine)

Mikata Y, Takekoshi A, Kaneda M, Konno H, Yasuda K, Aoyama M, Tamotsu S.

Dalton Trans., 46: 632-637 (2017)

2. OFF-ON-OFF Fluorescent Response of *N,N,N',N'*-tetrakis (1-isoquinolylmethyl) -2-hydroxy-1, 3-propanediamine (1-isoHTQHPN) toward Zn<sup>2+</sup>

Mikata Y, Ohnishi R, Ugai A, Konno H, Nakata Y, Hamagami I, Sato S.

3. OFF-ON, Ratiometric, and ON-OFF Fluorescent Responses of Thioether-Linked Bisquinolines toward Hg<sup>2+</sup> and Fe<sup>3+</sup> Ions

Mikata Y, Nakanishi K, Nakagaki F, Kizu A, Konno H.

Eur. J. Inorg. Chem., 3769-3780 (2015)



## Development of new functions and reactions based on organometallic clusters and synthesis of supramolecules comprised of metal clusters

**NAKAJIMA Takayuki / Associate Professor**

**t.nakajima@cc.nara-wu.ac.jp**

**EDUCATION:** 1998 Graduate School of Science and Engineering, Doctor later, Waseda University

**ACADEMIC DEGREES:** Ph.D. Waseda University

### SUBJECT OF RESEARCH:

Development of new functions and reactions based on organometallic clusters supported by multidentate ligands and synthesis of supramolecules comprised of metal clusters

### SELECTED PUBLICATIONS:

1. Oxidative Addition of Aromatic ortho C-H Bond of Tetraphosphine to Asymmetric Diiridium(I) Centres

Nakajima T, Noda S, Sakamoto M, Matsui A, Nakamae K, Kure B, Ura Y, Tanase T.

Dalton Trans., 45: 4747-4761 (2016)

2. Reversible Dioxygen Binding on Asymmetric Dinuclear Rhodium Centres

Nakajima T, Sakamoto M, Kurai S, Kure B, Tanase T.

Chem. Commun., 4 9: 5239-5338 (2013)

3. Wheel-Shaped Icosanuclear Homo- and Heterometallic Complexes of NiII, CoII, and CuII Ions Supported by Unsymmetrical Aminoalcohol Ligands

Nakajima T, Seto K, Horikawa F, Shimizu I, Scheurer A, Kure B, Kajiwara T, Tanase T, Mikuriya M.

Inorg. Chem., 51: 12503-12510 (2012)



## Fine Synthesis and Functions of Multinuclear Transition–Metal Complexes

**NAKAMAE Kanako / Assistant Professor**

[nakamae@cc.nara-wu.ac.jp](mailto:nakamae@cc.nara-wu.ac.jp)

**EDUCATION:** 2015 Graduate School of Humanities and Sciences, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

### SUBJECT OF RESEARCH:

Development of New Materials Based on Fine Syntheses of Multinuclear Transition–Metal Complexes

Nakamae K, Kure B, Nakajima T, Ura Y, Tanase T.

Chem. Asian J., 9: 3106–3110 (2014)

DOI: 10.1002/asia.201402900

### SELECTED PUBLICATIONS:

1. Self-Alignment of Low-Valent Octanuclear Palladium Atoms

Nakamae K, Takemura Y, Kure B, Nakajima T, Kitagawa Y, Tanase T.

Angew. Chem. Int. Ed., 54: 1016–1021 (2015)

DOI: 10.1002/anie.201409511

3. A Fluxional Cu<sub>8</sub>H<sub>6</sub> Cluster Supported by Bis (diphenylphosphino) methane and Its Facile Reaction with CO<sub>2</sub>

Nakamae K, Tanaka M, Kure B, Nakajima T, Ura Y, Tanase T.

Chem. Eur. J., 23 in press (2017)

DOI: 10.1002/chem.201702071

2. Facile Insertion of Carbon Dioxide into Cu<sub>2</sub>(μ–H) Dinuclear Units Supported by Tetrakisphosphine Ligands



## Development of mass spectrometric methods for studies on the structure, function, and interaction of proteins

**NAKAZAWA Takashi / Professor**

[t.nakazawa@cc.nara-wu.ac.jp](mailto:t.nakazawa@cc.nara-wu.ac.jp)

**EDUCATION:** 1982 Graduate School of Science, Osaka University

1977 Faculty of Science, Osaka University

**ACADEMIC DEGREES:** Ph.D. Osaka University

### SUBJECT OF RESEARCH:

1. Development of the method for identifying animals species based on amino acid sequencing of collagen in archaeological samples using mass spectrometry

2. Analysis of protein functions using histidine residues as micro-environmental probes

2. Imidazole C-2 hydrogen/deuterium exchange reaction at histidine for probing protein structure and function with matrix-assisted laser desorption ionization mass spectrometry

Hayashi N, Kuyama H, Nakajima C, Kawahara K, Miyagi M, Nishimura O, Matsuo H, Nakazawa T.

Biochemistry 53(11): 1818-1826 (2014)

### SELECTED PUBLICATIONS:

1. Characterization of binding media in Egyptian Romano portraits using enzyme-linked immunosorbent assay and mass spectrometry

Mazurek J, Svoboda M, Maish J, Kawahara K, Fukakusa S, Nakazawa T, Taniguchi Y.

e-Preservation Science 11, 76-83 (2014)

3. X-ray snapshots of a pyridoxal enzyme: a catalytic mechanism involving concerted [1,5]-hydrogen sigmatropy in methionine γ-lyase

Sato D, Shiba T, Karaki T, Yamagata W, Nozaki T, Nakazawa T, Harada S.

Scientific Reports, in press (2017)



## Computational physical chemistry: Quantum dynamics of molecular systems

**OHTA Yasuhito / Associate Professor**

[ohta@cc.nara-wu.ac.jp](mailto:ohta@cc.nara-wu.ac.jp)

**EDUCATION:** 2001 Kanazawa University

**ACADEMIC DEGREES:** Ph.D. Kanazawa University

### SUBJECT OF RESEARCH:

Quantum chemical molecular dynamics simulation of the self-organization reaction of nano materials

Iron Particle

Ohta Y, Okamoto Y, Alister J. Page, Stephan Irle, Morokuma K.

ACS NANO, 3: 3413-3420 (2009)

### SELECTED PUBLICATIONS:

1. Possible Mechanism of BN Fullerene Formation from a Boron Cluster: Density-Functional Tight-Binding Molecular Dynamics Simulations

Ohta Y.

Journal of Computational Chemistry, 37: 886-895 (2016)

DOI: 10.1002/jcc.24287

3. Density-functional tight-binding molecular dynamics simulations of SWCNT growth by surface carbon diffusion on an iron cluster

Ohta Y, Okamoto Y, Stephan Irle, Morokuma K.

Carbon, 47: 1270-1275 (2009)

2. Quantum Chemical Molecular Dynamics Simulation of Single-Walled Carbon Nanotube Cap Nucleation on an



## Design and photofunctionalization of metalloproteins

**TAKASHIMA Hiroshi / Associate Professor**

[hiroshi@cc.nara-wu.ac.jp](mailto:hiroshi@cc.nara-wu.ac.jp)

**EDUCATION:** 2000 Graduate School of Engineering, Kyushu University

1997 Graduate School of Engineering, Doshisha University

**ACADEMIC DEGREES:** Ph. D. Kyushu University

### SUBJECT OF RESEARCH:

Photoinduced electron transfer reactions in the metalloprotein containing a photofunctional molecule.

2. Emission property and DFT calculation for the <sup>3</sup>MLCT luminescence of Ru(bpy)<sub>2</sub>(L)<sup>2+</sup> complex

Yoshikawa N, Kimura H, Yamabe S, Kanehisa N, Inoue T, Takashima H.

Journal of Molecular Structure, 1117: 49-56 (2016)

DOI: 10.1016/j.molstruc.2016.03.069

### SELECTED PUBLICATIONS:

1. Syntheses, X-ray crystal structures, and emission properties of diprotonated tetrapyrrolylpyrazine and triprotonated terpyridine (Cover Article)

Yoshikawa N, Yamabe S, Kanehisa N, Inoue T, Takashima H.

Journal of Physical Organic Chemistry, 29(6): 269-275 (2016)

DOI: 10.1002/poc.3527

3. Photoinduced Electron-Transfer Reactions of Carbonic Anhydrase Inhibitor Containing tris(2,2'-Bipyridine) ruthenium(II) Analogue

Takashima H, Fukuda M, Nakagaki F, Ogata T, Tsukahara K.

The Journal of Physical Chemistry B, 117 (9): 2625-2635 (2013) DOI: 10.1021/jp310604w



**Unimolecular Dissociation and Ion-Molecule Reaction Dynamics in the Gas Phase by Combining Mass Spectrometric Studies with Theoretical Methods, and Development of Software for Fungal Species Identification**

**TAKEUCHI Takae / Associate Professor / takeuchi\_t@cc.nara-wu.ac.jp**

**EDUCATION:** 1985 Graduate School of Humanities and Sciences, Nara Women's University  
1982 Graduate School of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

**SUBJECT OF RESEARCH:**

1. Theoretical Study of the Fragmentation Mechanism in Mass Spectrometry: Energetics and Dynamics
2. Development of Fungal Odor Detection Technique and Software for Identifying Fungal Species by Ion Mobility and Mass Spectrometric Analysis of Microbial Volatile Organic Compounds (MVOCs) for Conservation of Cultural Properties
3. Generation and Reactivity of SiSi Multiple Bonded Ions Using Mass Spectrometry

Yamagaki T, Takeuchi M, Watanabe T, Sugahara K, Takeuchi T. *Rapid Comm. Mass Spectrom.*, 30: 2650-2654 (2016)

2. Analysis of Volatile Metabolites Emitted by Soil-Derived Fungi Using Head Space Solid-Phase Microextraction/ Gas Chromatography/ Mass Spectrometry I. *Aspergillus fumigatus*, *Aspergillus nidulans*, *Fusarium solani* and *Penicillium paneum*

Takeuchi T, Kimura T, Tanaka H, Kaneko S, Ichii S, Kiuchi M, Suzuki T. *Surf. Interface Anal.*, 44:694-698 (2012)

**SELECTED PUBLICATIONS:**

1. Mechanism for Odd-electron Anion Generation of Dihydroxybenzoic Acid Isomers in Matrix-assisted Laser Desorption/Ionization Mass Spectrometry with Density Functional Theory Calculations

3. Influence of Metal-Peptide Complexation on Fragmentation and Inter-Fragment Hydrogen Migration in Electron Transfer Dissociation  
Asakawa D, Takeuchi T, Yamashita A, Wada Y.  
*J. Am. Soc. Mass Spectrom.*, 25: 1029-1039 (2014)



**Organometallic, coordination, and bioinorganic chemistry based on multinuclear metal centers**

**TANASE Tomoaki / Professor**  
**tanase@cc.nara-wu.ac.jp**

**EDUCATION:** 1988 Synthetic Chemistry, Graduate School of Engineering, The University of Tokyo  
1983 Faculty of Engineering, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

**SUBJECT OF RESEARCH:**

1. Extended Metal Atom Chains Supported by Linear Polyphosphines
2. Structurally Constrained Organometallic Clusters by Using Multidentate Ligands
3. Constructions of Multinuclear Reaction Centers Inspired by Metalloenzymes
4. Bioinorganic Chemistry on Di- and Multinuclear Metal Complexes Containing Carbohydrates

Tanase T, Morita K, Otaki R, Yamamoto K, Kaneko Y, Nakamae K, Kure B, Nakajima T.  
*Chem. Eur. J.*, 23: 524-528 (2017)

2. Planar PtPd<sub>3</sub> Complexes Stabilized by Three Bridging Silylene Ligands  
Tanabe M, Yumoto R, Yamada T, Fukuta T, Hoshino T, Osakada K, Tanase T.  
*Chem. Eur. J.*, 23: 1386-1392 (2017)

**SELECTED PUBLICATIONS:**

1. Chiral Self-Recognition between Stereogenic Tetrapalladium Units Affording Pd<sub>8</sub> Chains Supported by Homochiral Tetrakisphosphines

3. Self-Alignment of Low-Valent Octanuclear Palladium Atoms, Nakamae K, Takemura Y, Kure B, Nakajima T, Kitagawa Y, Tanase T.  
*Angew. Chem. Int. Ed.*, 54: 1016-1021 (2015)



**Research on the synthesis, reactivity, and catalysis of novel transition metal complexes toward a sustainable future**

**URA Yasuyuki / Associate Professor / ura@cc.nara-wu.ac.jp**

**EDUCATION:** 2001 Graduate School of Pharmaceutical Sciences, Hokkaido University  
1997 Faculty of Pharmaceutical Sciences, Hokkaido University

**ACADEMIC DEGREES:** Ph. D. Hokkaido University

**SUBJECT OF RESEARCH:**

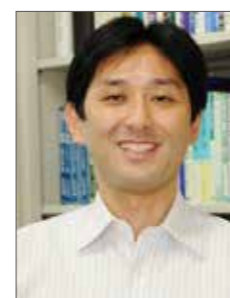
1. Development of environmental load-reducing organic synthetic reactions using transition metal catalysts
2. Synthesis, reactivity, and catalysis of novel transition metal complexes

2. Oxygenation of a Benzyl Ligand in SNS-Palladium Complexes with O<sub>2</sub>: Acceleration by Anions or Brønsted Acids  
Shimokawa R, Kawada Y, Hayashi M, Kataoka Y, Ura Y.  
*Dalton Trans.*, 45: 16112-16116 (2016)  
DOI: 10.1039/C6DT02948E

**SELECTED PUBLICATIONS:**

1. Palladium-catalyzed Aerobic Synthesis of Terminal Acetals from Vinylarenes Assisted by  $\pi$ -Acceptor Ligands  
Matsumura S, Sato R, Nakaoka S, Yokotani W, Murakami Y, Kataoka Y, Ura Y.  
*ChemCatChem*, 9: 751-757 (2017)  
DOI: 10.1002/cctc.201601517

3. Maleimide-assisted anti-Markovnikov Wacker-type oxidation of vinylarenes using molecular oxygen as a terminal oxidant  
Nakaoka S, Murakami Y, Kataoka Y, Ura Y.  
*Chem. Commun.*, 52: 335-338 (2016)  
DOI: 10.1039/C5CC06746D



**Physical chemistry of soft matter: Surfactants, amphiphilic polymers, ionic liquid, and metal nanoparticles**

**YOSHIMURA Tomokazu / Professor**  
**yoshimura@cc.nara-wu.ac.jp**

**EDUCATION:** 2001 Graduate School of Science and Technology, Kumamoto University

**ACADEMIC DEGREES:** Ph.D. Kumamoto University

**SUBJECT OF RESEARCH:**

1. Design and Synthesis of Novel Surfactants and Amphiphilic Polymers with High Functions
2. Study on Solution Properties of Surfactant
3. Study on Self-Assembly Using DLS, SAXS, SANS and cryo-TEM
4. Study on Liquid/Liquid Interface and Emulsion

DOI: 10.1021/acs.langmuir.7b00104

**SELECTED PUBLICATIONS:**

1. Adsorption and Aggregation Properties of Homogeneous Polyoxypropylene-Polyoxyethylene Alkyl Ether Type Nonionic Surfactants  
Yada S, Suzuki T, Hashimoto S, Yoshimura T.  
*Langmuir*, 33(15): 3794-3801 (2017)

2. Aggregate Formation of Glycyrrhizic Acid  
Matsuoka K, Miyajima R, Ishida Y, Karasawa S, Yoshimura T. *Colloids Surf. A* 500: 112-117 (2016)  
DOI: 10.1016/j.colsurfa.2016.04.032

3. Single-alkyl and multi-alkyl chain-containing amphiphilic oligomers with several sugar side chains: solution properties and nanostructural analysis of aggregates by SANS  
Yoshimura T, Nakatani Y, Matsuoka K, Akutsu K, Iwase H.  
*Colloid Polym. Sci.*, 295(5): 793-802 (2017)  
DOI: 10.1007/s00396-017-4063-3



### Cell-cell interaction in ciliates

**HARUMOTO Terue / Professor**

harumoto@cc.nara-wu.ac.jp

**EDUCATION:** 1992 Department of Molecular, Cellular and Animal Biology, University of Camerino, Italy  
1982 Graduate School of Science, Tohoku University

**ACADEMIC DEGREES:** Ph.D. University of Camerino  
Ph.D. Tohoku University

#### SUBJECT OF RESEARCH:

1. Predator-prey interaction in ciliates
2. Mechanism of induction of conjugation in ciliates
3. Stop codon recognition and eRF1s in ciliates

Kobayashi M, Miura M, Takusagawa M, Sugiura M, Harumoto T.

Zoological Science, 32(1): 53-61 (2015)

3. The defensive function of trichocysts in *Paramecium tetraurelia* against metazoan predators compared with the chemical defense of two species of toxin-containing ciliates.

Buonanno F, Harumoto T, Ortenzi C.

Zoological Science, 30(4): 255-261 (2013)

#### SELECTED PUBLICATIONS:

1. Rapid response to nutrient depletion on the expression of mating pheromone, gamone 1, in *Blepharisma japonicum*

Sugiura M, Yamanaka M, Suzaki T, Harumoto T.

Jpn.J.Protozool., 49(1,2): 27-36 (2016)

2. Two possible barriers blocking conjugation between different megakaryotypes of *Blepharisma*



### Ecology and evolution of plant reproductive strategy, with focuses on the mutualism between plants and pollinators and resource utilization of plants

**IDA Takashi / Associate Professor / tyida@cc.nara-wu.ac.jp**

**EDUCATION:** 2009 Hokkaido University  
2003 Hokkaido University

**ACADEMIC DEGREES:** Ph.D. Hokkaido University

#### SUBJECT OF RESEARCH:

1. Plant reproduction
2. Plant-animal interactions
3. Resource allocation

alpine herb *Ranunculus glacialis*

Ida TY, Totland Ø.

Alpine Botany, 124(1): 37-47 (2014)

3. Demand-driven resource investment in annual seed production by a perennial angiosperm precludes resource limitation

Ida TY, Harder LD, Kudo G.

Ecology, 94(1): 51-61(2013)

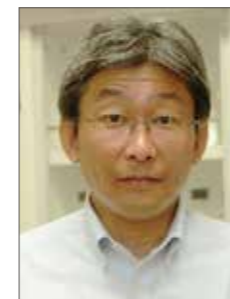
#### SELECTED PUBLICATIONS:

1. The consequences of demand-driven seed provisioning for sexual differences in reproductive investment in *Thalictrum occidentale* (Ranunculaceae)

Ida TY, Harder LD, Kudo G.

Journal of Ecology, 103(1): 269-280 (2015)

2. Heating effect by perianth retention on developing achenes and implications for seed production in the



### Genome structure in fungi. Fungal dimorphism

**IWAGUCHI Shin-ichi / Associate Professor**

iwaguchi@cc.nara-wu.ac.jp

**EDUCATION:** 1992 Graduate School of Medicine, Nagoya University  
1988 Graduate School of Science, Okayama University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

#### SUBJECT OF RESEARCH:

1. Chromosome rearrangement in Fungi chromosome rearrangement Electrophoretic Karyotype *Candida albicans*
2. Ploidy shift in Fungi *Candida albicans* Ploidy Loss of heterozygosity
3. Dimorphism in fungi Dimorphism Subtractive DNA cloning *Candida tropicalis*

Medical Mycology, 46(4): 655-663 (2008)

2. Chromosome translocation induced by the insertion of the URA blaster into the major repeat sequence (MRS) in *Candida albicans*

YEAST, 21: 619-634 (2004)

3. Pseudohyphal growth induced by exposure of yeast cells to subinhibitory levels of antifungal azoles in *Candida tropicalis*

Plant Morphology, 13(1): 2-10 (2001)

#### SELECTED PUBLICATIONS:

1. The loss of parts of chromosome 7 followed by the insertion of URA cassette into RB2 on MRS in *Candida albicans* strain CAI-4

Iwaguchi S, Suzuki M, Sakai N, Yokoyama K, Suzuki T.



### Biomembrane biogenesis and transport in eukaryotic cells

**KAGIWADA Satoshi / Professor**

kagiwada@cc.nara-wu.ac.jp

**EDUCATION:** 1993 Biophysics, Graduate School of Science, Kyoto University  
1988 Faculty of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

#### SUBJECT OF RESEARCH:

Structure and function of biomembrane

Kagiwada S, Uno Y, Nishii I, Noguchi T.

Algal Research, 8: 214-223 (2015)

#### SELECTED PUBLICATIONS:

1. Induction of intranuclear membranes by overproduction of Opi1p and Scs2p, regulators for yeast phospholipid biosynthesis, suggests a mechanism for Opi1p nuclear translocation

Masuda M, Ohshima A, Noguchi T, Kagiwada S.

Journal of Biochemistry, 159(3): 351-361 (2015)

3. Coordinated regulation by two VPS9 domain-containing guanine nucleotide exchange factors in small GTPase Rab5 signaling pathways in fission yeast.

Kagiwada S, Tsukamoto Y, Shimazu S, Takegawa K, Noguchi T, Miyamoto M.

Biochemistry and Biophysics Research Communications, 458(4): 802-809 (2015)

2. Colony sheath formation is accompanied by shell formation and release in the green alga *Botryococcus braunii* (race B)





## Studies on biodiversity and the maintaining mechanisms in freshwater ecosystems

**KATANO Izumi / Associate Professor**

**katano@cc.nara-wu.ac.jp**

**EDUCATION:** 2004 Graduate school of Human Culture, Nara Women's University  
1998 Faculty of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

### SUBJECT OF RESEARCH:

1. Studies for biodiversity-environment interactions in freshwater ecosystems
2. Conservation and restoration in river ecosystems
3. Biodiversity conservation in SATOYAMA ecosystems

2. A cross-system meta-analysis reveals coupled predation effects on prey biomass and diversity.

Katano I, Doi H, Eriksson BK, Hillebrand H.

*Oikos*, 124: 1427-1435 (2015)

3. Stream grazers determine their crawling direction on the basis of chemical and particulate microalgal cues.

Katano I, Doi H.

*Peer*, J 2: e503

DOI: 10.7717/peerj.503 (2014)

### SELECTED PUBLICATIONS:

1. Distribution and drift dispersal dynamics of a caddisfly grazer in response to resource abundance and its ontogeny.

Katano I, Mitsuhashi H, Doi H, Isobe Y, Oishi T.

*Royal Society of Open Science*, 4: 160732 (2017)



## Evolution of developmental complexities in volvocine algae

**NISHII Ichiro / Associate Professor**

**ichiron@cc.nara-wu.ac.jp**

**EDUCATION:** 1999 Physiology, Graduate School of Science, Osaka University  
1993 Department of Biology, Faculty of Science, Osaka University

**ACADEMIC DEGREES:** Ph.D. Osaka University

### SUBJECT OF RESEARCH:

Green algae, *Volvox* and volvocine algae, multicellularity, folding of multicellular sheet, morphogenesis, germsoma differentiation

multicellular green alga *Volvox carteri*.

S E Prochnik, J Umen, A M Nedelcu, A Hallmann, S M Miller, Nishii I, P Ferris, et al.

*Science*, 329: 223-226 (2010)

DOI: 10.1126/science.1188800

### SELECTED PUBLICATIONS:

1. Colony sheath formation is accompanied by shell formation and release in the green alga *Botryococcus braunii* (race B).

Uno Y, Nishii I, Kagiwada S, Noguchi T.

*Algal Research*, 8:214-223 (2015)

DOI: 10.1016/j.algal.2015.02.015

3. *Volvox*: Simple steps to developmental complexity? Nishii I, S M Miller.

*Current Opinion in Plant Biology*, 13: 646-653 (2010)

DOI: 10.1016/j.pbi.2010.10.005

2. Genomic analysis of organismal complexity in the



## Physiological analysis of non-visual photoreception in lower vertebrates

**KAWANO-YAMASHITA Emi / Assistant Professor**

**kawano@cc.nara-wu.ac.jp**

**EDUCATION:** 2006 Graduate School of Humanities and Sciences, Nara Women's University  
2001 Faculty of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

### SUBJECT OF RESEARCH:

Physiological analysis of non-visual photoreception in lower vertebrates

Koyanagi M, Wada S, Kawano-Yamashita E, Hara Y, Kuraku S, Kosaka S, Kawakami K, Tamotsu S, Tsukamoto H, Shichida Y, Terakita A.

*BMC Biol.*, 13: 73 (2015)

### SELECTED PUBLICATIONS:

1. Activation of transducin by bistable pigment parapinopsin in the pineal organ of lower vertebrates.

Kawano-Yamashita E, Koyanagi M, Wada S, Tsukamoto H, Nagata T, Terakita A.

*PLOS ONE*, 10 (10): e0141280 (2015)

3. The evolution and diversity of pineal and parapineal photopigments.

Kawano-Yamashita E, Koyanagi M, Terakita A.

*Evolution of visual and non-visual pigments*. Springer, 4: 1-21 (2014)

2. Diversification of non-visual photopigment parapinopsin in spectral sensitivity for diverse pineal functions.



## Plant-microbe interaction, symbiotic and non-symbiotic nitrogen fixation

**SAEKI Kazuhiko / Professor**

**ksaeki@cc.nara-wu.ac.jp**

**EDUCATION:** 1986 Course for Biological Chemistry, Graduate School of Science, Osaka University

**ACADEMIC DEGREES:** Ph.D. Osaka University

### SUBJECT OF RESEARCH:

Genome biology of nitrogen-fixing symbiosis; rhizobium plant-microbe interaction symbiosis

*Microbes Environ.*, 28(2): 275-278 (2013)

### SELECTED PUBLICATIONS:

1. Hijacking of leguminous nodulation signaling by the rhizobial type III secretion system

Okazaki S, Kaneko T, Sato S, Saeki K.

*Proc Natl Acad Sci U S A.*, 110(42): 17131-17136 (2013)

3. Rhizobial measures to evade host defense strategies and endogenous threats to persistent symbiotic nitrogen fixation: a focus on two legume-rhizobium model systems

Saeki K.

*Cell Mol Life Sci.*, 68(8): 1327-1339 (2011)

2. Commonalities and differences among symbiosis islands of three *Mesorhizobium loti* strains

Kasai-Maita H, Hirakawa H, Nakamura Y, Kaneko T, Miki K, Maruya J, Okazaki S, Tabata S, Saeki K, Sato S.



### Morphogenesis of higher plants and yeasts

**SAKAGUCHI Shuichi / Associate Professor**

**guchi@cc.nara-wu.ac.jp**

**EDUCATION:** 1988 Botany, Graduate School of Science, The University of Tokyo  
1982 Department of Biology (Botany), Faculty of Science, The University of Tokyo

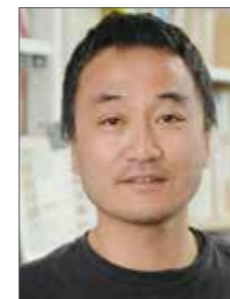
**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

#### SUBJECT OF RESEARCH:

1. Microtubular structures in shoot meristematic cells
2. 3-D analysis of plant cell shapes by micro X-ray computer tomography
3. Clonal analysis of leaves using a GUS-Ac transgene
4. Correlation of phyllotaxis and localization of Pin1 auxin transporter in shoot apical meristems
5. Posture control of zygomorphic flowers by torsion of flower stalks in response to gravity
6. Role for calcium in polarized growth in yeasts

#### SELECTED PUBLICATIONS:

1. Microtubules direct the layered structure of angiosperm shoot apical meristems (SAMs) Sakaguchi S. *In: Atlas of plant cell structure.* (Noguchi T. et al. (ed)) Springer, 6 Cytoskeletons: pp. 134-135 (2014)
2. Ion gradients in xylem exudate and guttation fluid related to tissue ion levels along primary leaves of barley Nagai M, Ohnishi M, Uehara T, Yamagami M, Miura E, Kamakura M, Kitamura A, Sakaguchi S, Sakamoto W, Shimmen T, Fukaki H, Reid Robert J, Furukawa A, Mimura T. *Plant, Cell & Environment*, 36(10): 1826-1837 (2013)



### Ecological and evolutionary studies on populations and communities

**SATO Hiroaki / Associate Professor**

**scarab@cc.nara-wu.ac.jp**

**EDUCATION:** 1987 Division of Environment Conservation, Graduate School of Environmental Science, Hokkaido University

1982 Zoological Institute, Faculty of Science, Hokkaido University

**ACADEMIC DEGREES:** Ph.D. Hokkaido University

#### SUBJECT OF RESEARCH:

1. Ecological and taxonomic studies of leafminers
2. Interactions between animals and plants
3. Behavioral and community ecology of dung beetles

mammalian but not insect herbivores

Iwamoto M, Horikawa C, Shikata M, Wasaka N., Kato T, Sato H.

*Ecological Research*, 29: 455-462 (2014)

#### SELECTED PUBLICATIONS:

1. Differential performance of red admiral butterflies on variants of Japanese nettle populations under intense versus low pressure from sika deer. Kohyama T, Horikawa C, Kawai S, Shikata M, Kato T and Sato H. *Ecosphere*, 8: e01568, 2017
2. Stinging hairs on the Japanese nettle *Urtica thunbergiana* have a defensive function against

3. Early leaf abscission has little effect on larval mortality of *Ectoedemia cerviparadisicola* (Lepidoptera, Nepticulidae) associated with *Quercus gilva* Yukari S, Yamamoto A, Oishi M, Sato H. *Annals Entomological Society of America*, 105: 572-581 (2012)



### Physiological and Biochemical studies on plant organelles, photosynthesis, and allelopathy

**SAKAI Atsushi / Professor**

**sakai@cc.nara-wu.ac.jp**

**EDUCATION:** 1991 Division of Plant Sciences, Graduate School of Science, The University of Tokyo  
1989 Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

#### SUBJECT OF RESEARCH:

1. Allelopathy
2. Hyper Sensitive Response
3. Function of Organelle Genomes
4. Photosynthesis and Respiration in Plants

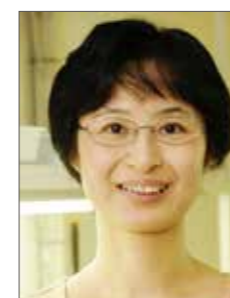
*Cytologia*, 80: 1-9 (2015)

3. Effects of chloroplast dysfunction on mitochondria: white sectors in variegated leaves have higher mitochondrial DNA levels and lower dark respiration rates than green sectors.

#### SELECTED PUBLICATIONS:

1. Monoterpenes of *Salvia leucophylla*. Sakai A, Yoshimura H. *Current Bioactive Compounds*, 8: 90-100 (2012)
2. Cytological studies on proliferation, differentiation, and death of BY-2 cultured tobacco cells Sakai A, Takusagawa M, Nio A, Sawai Y.

Toshiji H, Katsumata T, Takusagawa M, Yusa Y, Sakai A. *Protoplasma*, 249: 805-817 (2011)



### Environmental regulation of plant growth and development

**SATO-NARA Kumi / Associate Professor**

**kumisn@cc.nara-wu.ac.jp**

**EDUCATION:** 1997 Division of Biology, Graduate School of Science, Tohoku University

**ACADEMIC DEGREES:** Ph.D. Tohoku University

#### SUBJECT OF RESEARCH:

1. Light regulation of aquaporins and water transport in *Arabidopsis thaliana*. (MRI, circadian clock, phytochromes )
2. Environmental stresses and plant growth: role of vacuoles. (aquaporin TIP2s, salt, nutrient)
3. Light regulation of plant growth and root hair development. (*Arabidopsis* mutant, RNA splicing)

Hashimoto K, Maeshima M, Sato-Nara K.

*Plants*, 3: 177-195 (2014)

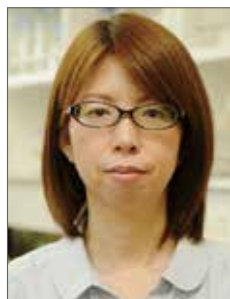
2. Diurnal changes in shoot water dynamics are synchronized with hypocotyl elongation in *Arabidopsis thaliana*.

Ishikawa H, Sato-Nara K, Takase T, Suzuki H. *Plant Signaling & Behavior*, 8(3) eLocation ID: e23 (2013)

#### SELECTED PUBLICATIONS:

1. Accumulation of TIP2;2 aquaporin during dark adaptation is partially phyA dependent in roots of *Arabidopsis* seedlings Uenishi Y, Nakabayashi Y, Tsuchihira A, Takusagawa M,

3. The circadian clock modulates water dynamics and aquaporin expression in *Arabidopsis* roots. Takase T, Ishikawa H, Murakami H, Kikuchi J, Sato-Nara K, Suzuki H. *Plant and Cell Physiology*, 52(2): 373-383 (2011)



### Studies on cell-cell interaction and the molecular mechanism of sexual reproduction in ciliates

**SUGIURA Mayumi / Associate Professor / msugi@cc.nara-wu.ac.jp**

**EDUCATION:** 2000 Division of Biological Science, Graduate School of Human Culture, Nara Women's University

1998 Department of Biology, Faculty of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

#### SUBJECT OF RESEARCH:

1. Molecular mechanism of induction of sexual reproduction in the ciliates
2. Sexual maturation and mating-type determination in the ciliate *Blepharisma*

2. Induced pluripotent stem cell generation-associated point mutations arise during the initial stages of the conversion of these cells.

Sugiura M, Kasama Y, Araki R, Hoki Y, Sunayama M, Uda M, Nakamura M, Ando S, Abe M. *Stem Cell Reports*, 2(1): 52-63 (2014)

#### SELECTED PUBLICATIONS:

1. Rapid response to nutrient depletion on the expression of mating pheromone, gamone 1, in *Blepharisma japonicum*.

Sugiura M, Yamanaka M, Suzaki T, Harumoto T. *Jpn. J. Protozool.*, 49(1,2): 27-36 (2016)

3. Alternative gene expression in type I and type II cells may enable further nuclear changes during conjugation of *Blepharisma japonicum*.

Sugiura M, Tanaka Y, Suzaki T, Harumoto T. *Protist*, 163(2): 204-216 (2012)



### Functional analysis of small G protein in membrane traffic, Roles of transcription factors and chrathrin assembly protein in Leukemogenesis

**WATANABE Toshio / Professor / toshiwatana@cc.nara-wu.ac.jp**

**EDUCATION:** 1987 Graduate School of Science, The University of Tokyo

1982 Biochemistry and Biophysics, Faculty of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

#### SUBJECT OF RESEARCH:

1. Roles of small G protein Arfs and their GAP in development
2. Roles of PICALM in mouse development and diseases
3. Roles of organelle during mouse development

2. Mice doubly-deficient in the Arf GAPs SMAP1 and SMAP2 exhibit embryonic lethality.

Sumiyoshi M, Masuda N, Tanuma N, Ogoh H, Imai E, Otsuka M, Hayakawa N, Ohno K, Matsui Y, Hara K, Gotoh R, Suzuki M, Rai S, Tanaka H, Matsumura I, Shima H, Watanabe T. *FEBS Letters*, 589: 2754-2762 (2015)

#### SELECTED PUBLICATIONS:

1. Partial loss of CALM function affects gamma-secretase-mediated A $\beta$ 42 production and amyloid deposition in vivo.

Kanatsu K, Hori Y, Takatori S, Watanabe T, Iwatsubo T, Tomita T. *Human Molecular Genetics*, in press (2016)

3. The mouse clathrin assembly protein PICALM is required for erythroid maturation and transferrin internalization, Suzuki M, Tanaka H, Tanimura A, Tanabe K, Oe N, Rai S, Kon S, Fukumoto M, Takei K, Abe T, Matsumura I, Kanakura Y, Watanabe T. *PLoS ONE*, 7(2): e31854 (2012)



### Physiological and histological studies on photoneuroendocrine organ

**TAMOTSU Satoshi / Professor**  
**tamotsu@cc.nara-wu.ac.jp**

**EDUCATION:** 1986 Graduate School of Medicine, Hamamatsu University School of Medicine

1979 Faculty of Science, Okayama University

**ACADEMIC DEGREES:** Ph.D. Hamamatsu University

#### SUBJECT OF RESEARCH:

1. Function and neural network of extraocular photoreceptive organ, pineal organ and deep-brain photoreceptor, in the vertebrate
2. Photosensory organs of deep-sea fishes
3. Neuroethological study for the sensory organ of the invertebrates, insects and echinoderms

Tsukamoto H, Shichida Y, Terakita A. *BMC Biol.*, 13(1): 73 (2015)

2. Beta-arrestin functionally regulates the non-bleaching pigment parainopsin in lamprey pineal.

Kawano-Yamashita E, Koyanagi M, Shichida Y, Oishi T, Tamotsu S, Terakita A. *PLoS ONE*, 6: e16402 (2011)

#### SELECTED PUBLICATIONS:

1. Diversification of non-visual photopigment parainopsin in spectral sensitivity for diverse pineal functions.

Koyanagi M, Wada S, Kawano-Yamashita E, Hara Y, Kuraku S, Kosaka S, Kawakami K, Tamotsu S,

3. Neuronal projections and putative interaction of multimodal inputs in the subesophageal ganglion in the blowfly, *Phormia regina*.

Maeda T, Tamotsu S, Iwasaki M, Nishimura T, Shimohigashi M, Hojo MK, Ozaki M. *Chem Senses*, 39(5): 391-401 (2014)



### Morphogenesis and functions of mammalian reproductive organs

**YASUDA Keiko / Professor**  
**ponko@cc.nara-wu.ac.jp**

**EDUCATION:** 1982 Graduate School of Science, Nara Women's University

1980 Faculty of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

#### SUBJECT OF RESEARCH:

Morphogenesis and functions of mammalian reproductive organs

2. Theca cell layer formation in mouse ovarian follicle culture in vitro.

Itami S, Yasuda K, Tamotsu S, Sakai A. *Cytologia*, 77: 287-288 (2012)

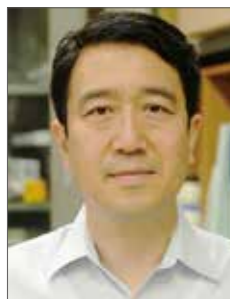
#### SELECTED PUBLICATIONS:

1. The protein phosphatase 6 catalytic subunit (Rpp6C) is indispensable for proper post-implantation embryogenesis.

Ogoh H, Tanuma N, Matsui Y, Hayakawa N, Inagaki A, Sumiyoshi M, Momoi Y, Kishimoto A, Suzuki M, Sasaki N, Ohuchi T, Nomura M, Teruya Y, Yasuda K, Watanabe T, Shima H. *Mechanisms of Development*, 139: 1-9 (2016)

3. Co-culturing of follicles with interstitial cells in collagen gel reproduce follicle development accompanied with theca cell layer formation.

Itami S, Yasuda K, Matsui C, Hashiura S, Sakai A, Tamotsu S. *Reproductive Biology and Endocrinology*, 9: 159-167 (2011)



### Phylogeny, classification and ultrastructure of protists

YOSHIKAWA Hisao / Associate Professor

h.yoshikawa@cc.nara-wu.ac.jp

**EDUCATION:** 1986 Graduate School of Medicine, Kyoto Prefectural University of Medicine  
1982 Biology, Graduate School of Science and Technology, Konan University

**ACADEMIC DEGREES:** Ph.D. Kyoto Prefectural University of Medicine

<b>SUBJECT OF RESEARCH:</b>	poor hygiene.
1. Molecular phylogenetic study on the genus <i>Blastocystis</i> .	Yoshikawa H, Tokoro M, Nagamoto T, Arayama S, Puji B S Asih, Ismail E Rozi, Din Syafruddin Parasitology International, 65: 780-784 (2016)
2. Molecular epidemiological research on human and animal <i>Blastocystis</i> infections.	
<b>SELECTED PUBLICATIONS:</b>	3. Genetic Diversity of <i>Blastocystis</i> in livestock and zoo animals.
1. <i>Blastocystis</i> phylogeny among various isolates from humans to insects.	Alfellani M A, Taner-Mulla D., Jacob A S, Imeede C A, Yoshikawa H, Stensvold C R, Clark C G. Protist, 154: 497-509 (2013)
Yoshikawa H, Koyama Y, Tsuchiya E, Takami K. Parasitology International, 65: 750-759 (2016)	
2. Molecular survey of <i>Blastocystis</i> sp. from humans and associated animals in an Indonesian community with	4. <i>Blastocystis</i> : Pathogen or Passenger? Mehlhorn H, Tan K S W, Yoshikawa H. Springer, (Ed) (2012)



### Ecological studies on freshwater and marine animals (mainly molluscs and crustaceans)

YUSA Yoichi / Professor

yusa@cc.nara-wu.ac.jp

**EDUCATION:** 1995 Zoology, Graduate School of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

<b>SUBJECT OF RESEARCH:</b>	Yusa Y, Kitaura J, Cazzaniga N J Malacologia, 59: 239-245 (2016)
1. Ecological studies on aquatic invertebrates	
2. Management of aquatic invertebrate pests	
<b>SELECTED PUBLICATIONS:</b>	3. Plastic sexual expression in the androdioecious barnacle <i>Octolasmis warwickii</i> (Cirripedia: Pedunculata)
1. Roles of the seasonal dynamics of ecosystem components in fluctuating indirect interactions on a rocky shore	Wijayanti H, Yusa Y. Biological Bulletin, 230: 51-55 (2016)
Wada Y, Iwasaki K, Ida T Y, Yusa Y. Ecology, in press (2017) DOI: 10.1002/ecy.1743	
2. Variation in the sex ratio of apple snails ( <i>Pomacea</i> spp.) in their native range	



### Analysis of atmospheric chemical and physical processes utilizing satellite measurements

HAYASHIDA Sachiko / Professor / sachiko@ics.nara-wu.ac.jp

**EDUCATION:** 1985 Graduate School of Science of Atmosphere and Hydrosphere, Nagoya University  
1980 Faculty of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Nagoya University

<b>SUBJECT OF RESEARCH:</b>	2. Observation of ozone enhancement in the lower troposphere over East Asia from a space-borne ultraviolet spectrometer
1. Study of physical and chemical processes of atmospheric minor species	Hayashida S, Liu X, Ono A, Yang K, Chance K. Atmospheric Chemistry and Physics, 15: 9865-9881 (2015)
2. Remote sensing of atmospheric minor species	
<b>SELECTED PUBLICATIONS:</b>	3. Methane concentrations over Monsoon Asia as observed by SCIAMACHY: Signals of methane emission from rice cultivation, Hayashida S, Ono A, Yoshizaki S, Frankenberg C, Takeuchi W, Yan X. Remote Sensing of Environment, 139: 246-256 (2013)
1. Study of lower tropospheric ozone over central and eastern China: Comparison of satellite observation with model simulation	
Hayashida S, Kayaba S, Deushi M, Yamaji K, Ono A, Kajino M, Sekiyama T T, Maki T, Liu X. "Land-Atmospheric Interactions in Asia", Book Series: Springer Remote Sensing/Photogrammetry, Editors: Vadrevu K P, Ohara T, Justice C, in press (2017)	



### Studies on the atmospheric environment with analyses of meteorological data

KUJI Makoto / Associate Professor

makato@ics.nara-wu.ac.jp

**EDUCATION:** 1993 Geophysics, Graduate School of Science, Tohoku University

**ACADEMIC DEGREES:** Ph.D. Tohoku University

<b>SUBJECT OF RESEARCH:</b>	Kitakoga S, Inoue Y, Kuji M, Hayasaka T. J. Meteor. Soc. Japan, 92A: 57-69 (2014)
1. Remote sensing of cloud, aerosol, and water vapor	
2. Atmospheric radiation and energy budget	
<b>SELECTED PUBLICATIONS:</b>	3. Development of a cloud detection method from whole-sky color images Yabuki M, Shiobara M, Nishinaka K, Kuji M. Polar Science, 8: 315-326 (2014)
1. Cloud fractions estimated from shipboard whole-sky camera and ceilometer observations	
Kuji M, Fujimoto R, Miyagawa M, Funada R, Hori M, Kobayashi H, Koga S, Matsushita J, Shiobara M Trans. JSASS Aerospace Tech. Japan, 14: pp.7 (2016)	
2. Characteristics of aerosol properties of haze and yellow sand examined from SKYNET measurements over East China Sea	4. Relationship between trace gases and aerosols from biomass burning in Southeast Asia using satellite and emission data Azuma Y, Nakamura M, Kuji M. Proc. SPIE, 8523: pp.8 (2012)



### Studies on environmental changes over land with analyses of satellite images

**MURAMATSU Kanako / Professor / muramatu@ics.nara-wu.ac.jp**

**EDUCATION:** 1993 Graduate school, Human Life and Environmental Science Course, Nara Women's University.

1989 Physics, Graduate school of Science, Nara Women's University

**ACADEMIC DEGREES:** Ph.D. Nara Women's University

#### SUBJECT OF RESEARCH:

Environmental Science, Remote Sensing, Vegetation change detection, Estimation of Gross Primary Production, Land Cover

southern Kyoto prefectures using multitemporal ALOS/AVNIR-2 data.

Hanaki N, Muramatsu K, Ochiai F, Soyama N, Daigo M, Tadono T.J.

The remote sensing society of Japan, 35(2): 77-88 (2015) In Japanese.

#### SELECTED PUBLICATIONS:

1. Determination of parameters for shrubs in the global gross primary production capacity estimation algorithm  
Mineshita Y, Muramatsu K, Soyama N, Thanyapraneekul J, Daigo M.

Journal of the Remote Sensing Society of Japan  
36(3): 236-246 (2016)

3. Algorithm developing of gross primary production from it's capacity and a canopy conductance index using flux and global observing satellite data.

Muramatsu K, Furumi S, Daigo M.

Proc. of SPIE, Vol. 9637, ISBN: 9781628418477, Remote Sensing for Agriculture, Ecosystems, and Hydrology XVII 9637 (2015)

2. Determination of bamboo distribution in Nara and

### Studies on planetary atmospheres using observational data and numerical simulations

**NOGUCHI Katsuyuki / Assistant Professor / nogu@ics.nara-wu.ac.jp**

**EDUCATION:** 2004 Division of Earth and Planetary Science, Graduate School of Science, The University of Tokyo

2000 Graduate School of Science, The University of Tokyo

**ACADEMIC DEGREES:** Ph.D. The University of Tokyo

#### SUBJECT OF RESEARCH:

Atmospheric Science

Noguchi K, Hayashi H.

Journal of Space Science Informatics Japan, 6: 109-116 (2017)

#### SELECTED PUBLICATIONS:

1. Role of stationary and transient waves in CO<sub>2</sub> supersaturation during northern winter in the Martian atmosphere revealed by MGS radio occultation measurements

Noguchi K, et al.

J. Geophys. Res. Planets, in press (2017)

3. Estimation of changes in the composition of the Martian atmosphere caused by CO<sub>2</sub> condensation from GRS Ar measurements and its application to the rederivation of MGS radio occultation measurements

Noguchi K, Ikeda S, Kuroda T, Tellmann S, Pätzold M.

J. Geophys. Res. Planets, 119(12): 2510-2521 (2014)

DOI: 10.1002/2014JE004629

2. Conversion of the MRO/MCS data into netCDF format and gridding of them for analysis and visualization by the use of GrADS



### Mathematical approaches to environmental risk assessment and modeling microbial biogeochemistry

**SETO Mayumi / Assistant Professor**

**seto@ics.nara-wu.ac.jp**

**EDUCATION:** 2008 Division of Earth and Planetary Sciences, Graduate School of Sciences, Kyushu University

**ACADEMIC DEGREES:** Ph.D. Kyushu University

#### SUBJECT OF RESEARCH:

1. Thermodynamic and kinetic limitations on microbial metabolism and growth

2. Risk assessment for aquatic ecosystems

3. Risk assessment and cost-benefit analysis of food safety policies

2. Sample size allocation for food item radiation monitoring and safety inspection

Seto M, Uriu K.

Risk Analysis, 35(3): 409-422 (2015)

DOI: 10.1111/risa.12276

#### SELECTED PUBLICATIONS:

1. Perspectives for ecosystem management based on ecosystem resilience and ecological thresholds against multiple and stochastic disturbances

Sasaki T, Furukawa T, Iwasaki Y, Seto M, Mori S A.

Ecological Indicators, 57: 395-408 (2015)

DOI: 10.1016/j.ecolind.2015.05.019

3. The Gibbs free energy threshold for the invasion of a microbial population under kinetic constraints

Seto M.

Geomicrobiology Journal, 31(8): 645-653 (2014)



### Modeling dynamics and evolution of lateral asymmetry in fish

**TAKAHASHI Satoshi / Associate Professor**

**takahasi@ics.nara-wu.ac.jp**

**EDUCATION:** 1990 Graduate School of Science, Kyoto University

**ACADEMIC DEGREES:** Ph.D. Kyoto University

#### SUBJECT OF RESEARCH:

1. Mathematical model of lateral asymmetry polymorphisms in fish

2. Dimension spectra of fractals

2. Measuring and evaluating morphological asymmetry in fish: distinct lateral dimorphism in the jaws of scale-eating cichlids

Hata H, Yasugi M, Takeuchi Y, Takahashi S, Hori M.

Ecology and Evolution, 3: 4641-4647 (2013)

#### SELECTED PUBLICATIONS:

1. Laterality is universal among fishes but increasingly cryptic among derived groups

Hori M, Nakajima M, Hata H, Yasugi M, Takahashi S, Nakae M, Yamaoka K, Kohda M, Kitamura J, Maehata M,

Tanaka H, Okada N, Takeuchi Y.

Zoological Science, in press (2017)

3. Sexual systems and dwarf males in barnacles: Integrating life history and sex allocation theories

Yamaguchi S, Yusa Y, Sawada K, Takahashi S.

J. Theor. Biol., 320: 1-9 (2013)



# Mathematical and computational modeling of population, behavioral, and evolutionary biology

TAKASU Fugo / Professor

takasu@es.nara-wu.ac.jp, takasu@ics.nara-wu.ac.jp

EDUCATION: 1994 Graduate School of Science, Kyoto University  
1990 Department of Biophysics, Faculty of Science, Kyoto University

ACADEMIC DEGREES: Ph.D. Kyoto University

### SUBJECT OF RESEARCH:

1. Spatial population and evolutionary dynamics in continuous space
2. Theoretical study on avian brood parasitism
3. Evolutionary games in space

2. Modeling the cuckoo's brood parasitic behavior in the presence of egg polymorphism

Liang W, Yang C, Takasu F.  
Journal of Ethology 34: 127-132 (2016)

3. Disappearance of eggs from non-parasitized nests of brood parasite hosts – the evolutionary equilibrium hypothesis revisited

Stokke B G, Røskft E, Moksnes A, Møller A P, Antonov A, Fossøy F, Liang W, Lopez-Iborra G, Moskat C, Shykoff J A, Soller M, Vikan J R, Yang C, Takasu F.  
Biological Journal of the Linnean Society  
DOI: 10.1111/bj.12733

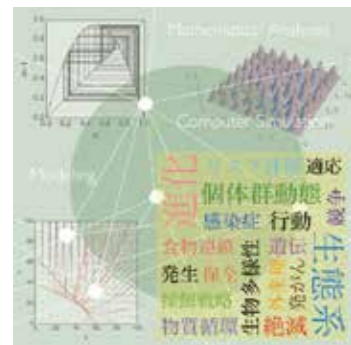
### SELECTED PUBLICATIONS:

1. Ancient origin and maternal inheritance of blue cuckoo eggs

Fossøy F, Sorenson M D, Liang W, Ekrem T, Moksnes A, Møller A P, Rutila J, Røskft E, Takasu F, Yang C, Stokke B G.

Nature Communications, 7(10272) (2016)

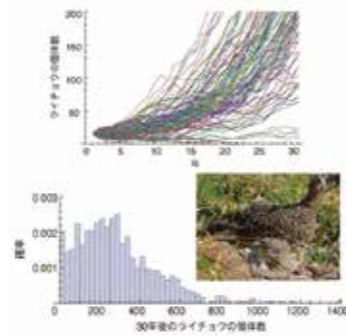
DOI: 10.1038/ncomms10272



Modeling and simulation of life systems



Daily discussion in the laboratory



Population viability analysis of the Japanese rock ptarmigan



Field Practice of Forest Biology

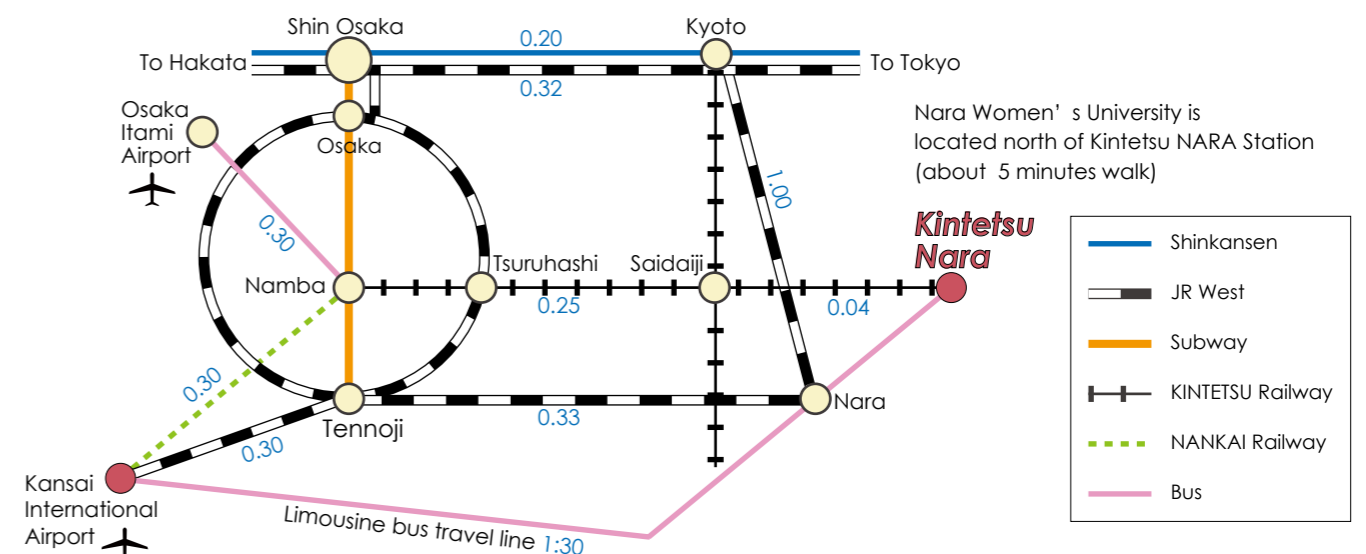
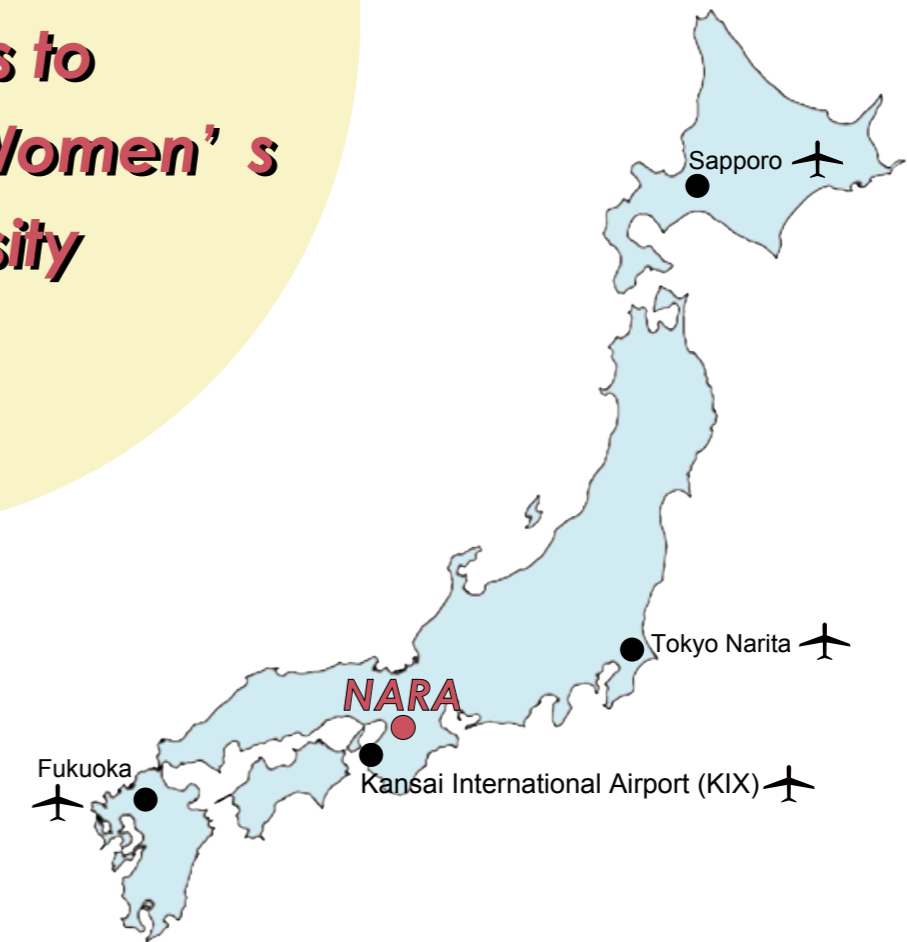


Field Practice of Marine Biology



Field Practice of Freshwater Biology

# Access to Nara Women's University



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