

FRONTIERS: A MULTIPLE LANDSCAPE
フロンティア: 複数の風景

SYMPOSIUM

フロンティア

2023

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OCT.



20th ANNIVERSARY OF ACADEMIC EXCHANGES
NAGOYA AND STRASBOURG UNIVERSITIES
名古屋大学とストラスブール大学の学術交流20周年



The “Frontiers: a multiple landscape” symposium is organized to celebrate the 20th anniversary and strengthen the exchanges and collaborations between the Universities of Nagoya and Strasbourg. It will focus on the theme of frontiers, a complex issue that can be explored in many ways.

The objective of this conference is to organize a multidisciplinary meeting by bringing together researchers from the natural and formal sciences as well as from the social sciences.

Organizing institutions

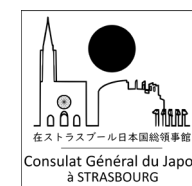
- ✎ *Nagoya University*
- ✎ *University of Strasbourg*

With the support of

- ✎ *Maison Universitaire France-Japon*
- ✎ *Consulate General of Japan in Strasbourg*
- ✎ *IdEx*
- ✎ *JSPS Strasbourg Office*

Scientific coordinators

- ✎ *Norimi Mizutani*
- ✎ *Vincent Robert*



_opening

8.30am–9.10am Opening and welcome speeches and Presentation of Symposium

- MICHEL DENEKEN, PRESIDENT OF THE UNIVERSITY OF STRASBOURG
- NORIMI MIZUTANI, VICE PRESIDENT INTERNATIONAL AFFAIRS, NAGOYA UNIVERSITY
- HIROYUKI UCHIDA, GENERAL CONSUL, CONSULATE OF JAPAN IN STRASBOURG
- KAZUHIKO SAIGO, DIRECTOR, JSPS STRASBOURG OFFICE
- VINCENT ROBERT ET NORIMI MIZUTANI, SCIENTIFIC COORDINATORS

_session 1 : Chemistry

CHAIRPERSON VOICHI NAKATANI

9.10am-9.35am Rational Construction of Molecule-based Strongly Isotropic Structures and their Functions

- KUNIO AWAGA, NAGOYA UNIVERSITY

9.35am-10am Steps Towards Complex Matter: Chemi stry!

- JEAN-MARIE LEHN, UNIVERSITY OF STRASBOURG

10am-10.20am Discussion

10.20am-10.30am Break

_session 2 : Geography

CHAIRPERSON LAURENT SCHMITT

10.35am-11am Interdisciplinary research activities on water and society in Japan

- SHINICHIRO NAKAMURA, NAGOYA UNIVERSITY

11am-11.25am Urban watercourses - a geo-historical perspective from the urban planner's point of view

- DOMINIQUE BADARIOTTI, UNIVERSITY OF STRASBOURG

11.25am-11.55am Discussion & Photo

_session 3: Economy/ Management

CHAIRPERSON MICHÈLE FORTE

2pm-2.25pm Social Acceptance of Renewable Energy in Japan

- YASUSHI MARUYAMA, NAGOYA UNIVERSTY

2.25pm-2.50pm New Frontiers in Technology Management

- THIERRY BURGER-HELMCHEN, UNIVERSITY OF STRASBOURG

2.50pm-3.10pm Discussion

3.10pm-3.30pm Break

_session 4 Artificial Intelligence

CHAIRPERSON: CEDRIC WEMMERT

3.30pm-3.55pm On the dislocation-induced mass transfer mechanism in nanostructured metallic materials

- YI CUI, NAGOYA UNIVERSITY / ONLINE TALK

3.55pm-4.20pm Generative AI: Breaking Barriers and Borders

- THOMAS LAMPERT, UNIVERSITY OF STRASBOURG

4.20pm-4.45pm Breaking Barriers: Research in Biophysics through Interdisciplinary and International Collaborations

- FLORENCE TAMA, NAGOYA UNIVERSITY

4.45am-5.10pm Discussion

_session 5 Health - Biology

CHAIRPERSON CATHERINE FLORENTZ

8.30am-8.55am Collective synthesis of natural products for elucidation of their new biological activities

- TOSHIO NISHIKAWA, NAGOYA UNIVERSITY

8.55am-9.20am Beyond the frontiers for the cure of advanced liver diseases

- CATHERINE SCHUSTER, UNIVERSITY OF STRASBOURG

9.20am-9.40am Discussion

_session 6 Society

CHAIRPERSON SANDRA SCHAAL

9.45am-10.10am Human Rights as a frontier breaker?

- PEGGY DUCOULOMBIER, UNIVERSITY OF STRASBOURG

10.10am-10.35am Transcending food boundaries – From opposition to complementarity: the converging trajectories of French and Japanese gastronomic models

- NICOLAS BAUMERT, NAGOYA UNIVERSITY

10.35am-11am Discussion

11am-11.15am Break

_session 7 Physics

CHAIRPERSON PAUL-ANTOINE HERVIEUX

11.15am-11.40am Role of nitrides on the establishment of an earth-friendly comfortable, convenient, and people-friendly society

- HIROSHI AMANO, NAGOYA UNIVERSITY (PRE-RECORDED VIDEO)

11.40am-12.05pm The Alchemy of Vacuum

- THOMAS EBBESEN, UNIVERSITY OF STRASBOURG

12.05pm-12.25pm Discussion

12.25pm-12.45pm Closing remarks

- NORIMI MIZUTANI, VP INTERNATIONAL AFFAIRS, NAGOYA UNIVERSITY
- RÉMI BARILLON, VP RESEARCH, UNIVERSITY OF STRASBOURG

Kunio Awaga

LABORATORY OF ADVANCE MATERIAL

DEPARTMENT OF CHEMISTRY / NAGOYA UNIVERSITY



EDUCATION

- 1983 B.S., Univ. of Tokyo
- 1985 M.S. Univ. of Tokyo
- 1988 D.S., Univ. of Tokyo

SCIENTIFIC INTERESTS

- Organic Electronics/Spintronics, Molecule-based Battery, Molecular Magnetism

RECENT PAPERS

- Q. Chen, O. Adeniran, ZF. Liu, ZY. Zhang, K. Awaga, "Graphite-like Charge Storage Mechanism in a 2D pi-d Conjugated Metal-Organic Framework Revealed by Stepwise Magnetic Monitoring", *J. Am. Chem. Soc.*, 145, 1062 (2023). (DOI: 10.1021/jacs.2c10650)
- R. Suizu, K. Awaga, "Line graph theory reveals hidden spin frustration and bond frustration in molecular crystals with strong isotropy", *J. Mater. Chem. C*, 10, 1196 (2021). (DOI: 10.1039/d1tc05161j)

Rational Construction of Molecule-based Strongly Isotropic Structures and their Functions

KUNIO AWAGA

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Chemistry can be described as the study of structure building using atoms and molecules, mainly in the microscopic or mesoscopic realm. Although the methods of structure building in chemistry are constantly evolving, it is no exaggeration to say that whether the structures lead to useful properties and functions, and ultimately to applications, is still in a state of exploration. Interestingly, the insights bridging chemical structure and function often emerge not solely from within the realm of chemistry itself, but also from neighboring fields like physics and biology. Chemical structures such as molecular and crystal structures, are characterized by «symmetry» of atomic positions, which has been explained by the group theory. Recently, however, mathematicians have proposed a new symmetry, «strong isotropy,» which is due to both atomic and bond positions. It has been mathematically proven that only three lattices have this symmetry: honeycomb lattices in two dimensions, and diamond and K4 lattices in three dimensions (see Fig. 1)¹. Notably, these structures are theoretically predicted to display robustness in their architecture, porosity, and even unconventional band structures.

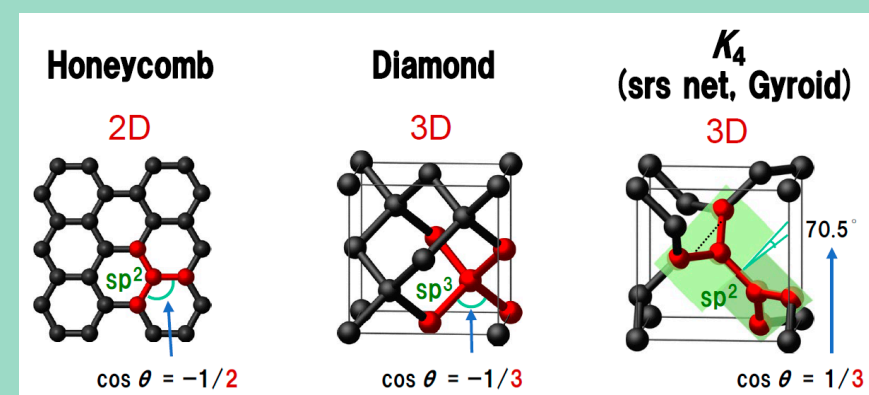
We are now studying the supramolecular construction of these three structures by polyhedral π -conjugated molecules, metal-organic frameworks (MOFs) and covalent-organic frameworks (COFs), featuring C3 or Td symmetry. In this presentation, we will elaborate on our recent endeavors to create molecule-based honeycomb and K4 lattices, as well as their application in solid-state electrochemistry and optoelectronics^{2,3,4}

¹ Sunada, T., *Notices Amer. Math. Soc.*, 2008, 55, 208.

² Mizuno, A., Shuku, Y., Matsushita, M.M., Tsuchiizu, M., Hara, Y., Wada, N., Shimizu, Y., Awaga, K., *Phys. Rev. Lett.*, 2017, 119, 057201.

³ Chen, Q., Adeniran, O., Liu, ZF., Zhang, ZY., Awaga, K., *J. Am. Chem. Soc.*, 2023, 145, 1062.

⁴ Nakashima, K., Suizu, R., Morishita, S., Tsurumachi, N., Funahashi, M., Masu, H., Ozawa, R., Nakamura, K., Awaga, K., *ACS Mater. Au*, 2023, 3, 201.





Jean – Marie Lehn

EMERITUS PROFESSOR

ISIS / UNIVERSITY OF STRASBOURG

EDUCATION

- ✦ Professor at the University of Strasbourg Institute for Advanced Study (USIAS), Chair of Chemistry of Complex Systems
- ✦ Emeritus Professor at the University of Strasbourg
- ✦ 1997-2004 : Director of ISIS (Institut de Science et d'Ingénierie Supramoléculaires), University of Strasbourg
- ✦ 1987: Nobel Prize in Chemistry
- ✦ 1964: Post-Doctoral Research Fellow at Harvard University
- ✦ 1963: Doctorat-ès-Sciences (Ph.D.), University of Strasbourg

SCIENTIFIC INTEREST

- ✦ The fields of research I have worked on over the years
- ✦ Theoretical Organic Chemistry
- ✦ Dynamic Nuclear Magnetic Resonance
- ✦ Molecular Dynamics and Liquid Structure
- ✦ Supramolecular Chemistr
- ✦ Self-assembly and Self-organization
- ✦ Constitutional dynamic Chemistry – Adaptive Chemistry

RECENT PAPERS

1036 publications; 3 books

- ✦ J.-M. LEHN, "Supramolecular Chemistry – Concepts and Perspectives", VCH, 1995.
- ✦ B. DIETRICH, P. VIOUT, J.-M. LEHN, "Aspects de la chimie des composés macrocycliques", InterEditions/ Editions du CNRS, 1991.
- ✦ "Chemia Supramolekularna", Collection of publications by J.-M. LEHN, organised and translated into Polish under the direction of Janusz Lipkowski, Institute of Physical Chemistry, Polish Academy of Sciences, 1985.

Steps Towards Complex Matter: Chemistry !

JEAN-MARIE LEHN

LEHN@UNISTRA.FR

The evolution of the universe has generated more and more complex forms of matter through self-organization, from particles up to living and thinking matter. Mankind has created science to unravel the ways and means by which matter has become organized up to a thinking organism in particular on our planet earth. Self-organization is the process by which steps towards life and thought have emerged. Animate as well as inanimate matter, living organisms as well as materials, are formed of molecules and of the organized entities resulting from the interaction of molecules with each other. Chemistry provides the bridge and unravels the steps from the molecules of inanimate matter and the highly complex molecular architectures and systems which make up living and thinking organisms. Molecular chemistry has developed very powerful methods for constructing ever more complex molecules from atoms. Supramolecular chemistry seeks to understand and control the formation and behaviour of complex molecular assemblies. The field of chemistry is the universe of all possible structures and transformations of molecular matter, of which those actually realized in nature represent just one world among all the worlds that await to be created. Conceptual considerations on science in general will be presented. Science shapes the future of humanity!



Shinichiro Nakamura

LAND AND INFRASTRUCTURE DESIGN LABORATORY / DEPARTMENT OF CIVIL AND

ENVIRONMENTAL ENGINEERING / NAGOYA UNIVERSITY

EDUCATION

Shinichiro Nakamura holds a B.S. (Shibaura Institute of Technology 2006), M.Eng in Civil Engineering (the University of Tokyo 2008), and Ph.D (2014) from the University of Tokyo. From 2008 to 2009, he worked as a civil engineering consultant in Tokyo. During the period 2010-2014, he was a project assistant professor at the University of Tokyo. In 2014, he joined Nagoya University as a lecturer and was promoted to associate professor in 2018. From June 2023 to March 2024, he is an invited researcher of L'École des hautes études en sciences sociales (EHESS) in Paris.

SCIENTIFIC INTEREST

Socio-hydrology, water resources management, water history, human-water interactions

RECENT PAPERS

- ✦ Nakamura, S. 2023. Designing a Deluge: A History of Design Flood Estimation in Japan, in Breyfogle, N. B. & Brown, P. C. (ed.) Hydraulic Societies: Water, Power, and Control in East and Central Asian History, Oregon State University Press, Corvallis.
- ✦ Perera, C. and S. Nakamura 2023. Conceptualizing the effectiveness of flood risk information with a socio-hydrological model: a case study in Lower Kelani River Basin, Sri Lanka, *Frontiers in Water*, Volume 5.
- ✦ Padiyedath Gopalan, S., A. Champathong, T. Sukhapunnaphan, S. Nakamura, N. Hanasaki 2022. Potential impact of diversion canals and retention areas as climate change adaptation measures on flood risk reduction: A hydrological modelling case study from the Chao Phraya River Basin, Thailand, *Science of The Total Environment*, 841, 156742.
- ✦ Nakamura, S., T. Oki, S. Kanae 2022. Lost Rivers: Tokyo's Sewage Problem in the High-Growth Period, 1953-73, *Technology and Culture*, 63 (2),427-449.
- ✦ Padiyedath Gopalan, S., A. Champathong, T. Sukhapunnaphan, S. Nakamura, N. Hanasaki 2022. Inclusion of flood diversion canal operation in the H08 hydrological model with a case study from the Chao Phraya River basin: model development and validation, *Hydrology and Earth System Sciences*, 26 (9), 2541-2560.
- ✦ Shibata, N., Nakai F., Otsuyama K., Nakamura S. 2022. Socio-hydrological modeling and its issues in Japan: a case study in Naganuma District, Nagano City, *Hydrological Research Letters*,16 (1), 32-39.
- ✦ Perera, C. and Nakamura S. 2022. Improvement of socio-hydrological model to capture the dynamics of combined river and urban floods: a case study in Lower Kelani River Basin, Sri Lanka, *Hydrological Research Letters*,16 (2), 40-46.

Interdisciplinary Research on Human-Water Interaction in Asia

SHINICHIRO NAKAMAURA

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Water-related problems (floods, droughts, water pollution, etc.) are occurring all over the world. To solve these complex problems, it is necessary to understand the dynamics of human-water interactions in interdisciplinary approaches. Since the emergence of socio-hydrology as a new discipline related to water, research on human-water interactions has been conducted worldwide in the last decade¹.

The South Asian region, in particular, is facing serious water problems due to rapid population growth, inadequate infrastructure, and severe weather conditions such as typhoons and storms. It is an urgent issue to reveal the dynamics of human-water interactions in Asia and to provide solutions to the problems.

This presentation first reviews the progress of socio-hydrological research and then presents an interdisciplinary case study in the Lower Kelani River Basin (LKRB) in Sri Lanka². The case study aims to understand the effect of flood risk information (FRI), such as hazard maps and disaster education, on collective memory of floods and to incorporate these dynamics into a socio-hydrological model. Interviews incorporating FRI were conducted twice at 6-month intervals in several flood-prone LKRB communities. Based on the survey results, a modified socio-hydrological model was applied to assess the effectiveness of FRI on flood damage reduction. The results suggest that the outputs of the socio-hydrological model contribute to the quantitative assessment of the effect of flood risk information on flood risk management. Finally, based on the case study, the potential for future interdisciplinary water researches in Asia is discussed.

¹ Sivapalan, M., Savenije, H.H. and Blöschl, G. *Hydrol. Process* 2012, 26(8), 1270.

² Perera, C. and Nakamura S. *Frontiers in Water* 2023, Volume 5.

Dominique Badariotti

LABORATOIRE LIVE (IMAGE VILLE ENVIRONNEMENT) UMR 7362

FACULTY OF GEOGRAPHY / UNIVERSITY OF STRASBOURG



EDUCATION

- ✦ 2002 PHD in Urban Geography and Town Planning, University of Franche-Comté, Besançon

EXPERIENCE

- ✦ Since 2007 Professor at the University of Strasbourg, Town and Land Planning Master
- ✦ Since 2012 Director of the LIVE (UMR 7362 CNRS/Unistra) laboratory
- ✦ Since 2018 Director of the Observatoire Hommes Milieux (OHM) Fessenheim (CNRS/Unistra)

SCIENTIFIC INTEREST

FIELD OF TEACHING

- ✦ Urban geography, Urban planning and land use planning
- ✦ Complex systems, epistemology

FIELD OF RESEARCH

- ✦ Urban geography (morphology and dynamics) and urban modeling
- ✦ Health geography, Spatial analysis
- ✦ Historical geography, human ecology (targetted water and rivers)

RECENT PAPERS

- ✦ Angela Osorio, Laurent Schmitt, Dominique Badariotti, Yves Meinard (2023) Améliorer la gestion des espaces naturels par la participation. Une analyse du guide français pour l'élaboration des plans de gestion, Vertigo, avril 2023 (Volume 23 numéro 1) DOI: 10.4000/vertigo.40230
- ✦ Dominique Badariotti, Cyril Meyer, Yasmina Ramrani (2022) MOGUS: un outil de modélisation et d'analyse pour construire et comparer des trames urbaines, Revue Internationale de géomatique, 31 p., DOI: 10.3166/ri.2021.00109 © 2021 Lavoisier
- ✦ Dominique Badariotti, Fabien Pfaender, Jean Luc Pinol (2021) Trente millions d'adresses : boulevards et impasses d'une recherche sur la complexité lexicale et spatiale des odonymes Cybergéo, Sociéré Territoire, document 983, mis en ligne le 28 juin 2021, URL : <http://journals.openedition.org/cyberge/36989>, 34 p.
- ✦ Caline Ly Keng, Frédérique Berrod, Kenji Fujiki, Dominique Badariotti (2020) Apports de la cartographie du droit, à la géohistoire des pollutions industrielles des eaux du fleuve Rhin, Annales de géographie, n° 733-734, pp. 250-273

Urban watercourses - a geo-historical perspective from the urban planner's point of view

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Urban watercourses - a geo-historical perspective from the urban planner's point of view

- ✦ *Permanence of the human-river link, since sedentarization (riverside towns)*
- ✦ *Incessant efforts to benefit from this link (supplies, industry, transport, leisure, amenities - washrooms, parking lots, riverside paths...) but also to protect cities from it (low water levels, droughts, floods, diseases).*
- ✦ *Transformations: establishment of anthropogenic limits to rivers for these reasons (protection, exploitation) which may not be the best solution*
- ✦ *Violence of the urban rivers treatment, and consequences*
- ✦ *New light on urban rivers – another management is possible*

A few images to show the violence of all this... and a film to keep us going





Yasushi Maruyama

ENVIRONMENTAL POLICY / GRADUATE SCHOOL OF

ENVIRONMENTAL STUDIES / NAGOYA UNIVERSITY

EDUCATION

- ✦ B.A. in Sociology, Hitotsubashi University (1994)
- ✦ M.A. in Social Sciences, Graduate School of Arts and Sciences, The University of Tokyo (1996)
- ✦ Ph. D. Graduate School of Arts and Sciences, the University of Tokyo (2002)

SCIENTIFIC INTEREST

- ✦ Renewable energy, Social Acceptance, Risk Communication, Climate Justice

RECENT PAPERS

- ✦ Yasushi Maruyama, et.al., 2006, «The rise of community wind power in Japan: enhanced acceptance through social innovation», Energy Policy, 35-05, 2761-2769.
- ✦ Memi Motosu, Yasushi Maruyama, 2016, «Local acceptance by people with unvoiced opinions living close to a wind farm: A case study from Japan» , Energy Policy, 91, 362–370.
- ✦ Christian Doedt, Yasushi Maruyama, 2023, «The mega solar Twitter discourse in Japan: Engaged opponents and silent proponents», Energy Policy, 175, in print.
- ✦ Yasushi Maruyama, 2022, “The Governance of Renewable Energy Projects and Expanded Distributive Justice” In: Miyauchi and Fukunaga(eds.), Adaptive Participatory Environmental Governance in Japan, Springer.

Social Acceptance of Renewable Energy in Japan

YASUSHI MARUYAMA

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HTTPS://WWW.SOCIAL.ENV.NAGOYA-U.AC.JP/SOCIOLOGY/MARUYAMA/

The purpose of this presentation is to examine the social acceptance of renewable energy projects (hereinafter referred to as «RE») in Japan and introduce good practices related to social justice.

Driven by concerns about climate change and other energy issues, there has been a global acceleration of efforts towards decarbonization. One specific strategy is the large-scale deployment of RE, which is considered a key measure within the international community, including the United Nations' Sustainable Development Goals (SDGs) and the Paris Agreement. In Japan, following the Great East Japan Earthquake, the utilization of RE, such as solar and wind power, has increased approximately fourfold, and further expansion is anticipated in the future.

However, various challenges have also emerged. While RE projects bring risk for natural and living environment, increasing number of people have expressed concerns and sometimes opposition. Discussions have focused on matters of social justice, such as «just transition»¹, emphasizing the need for fairness in the transition process and social acceptance².

Based on stakeholder interviews and media analyses, this research will identify structural problems that contribute to conflicting reactions among stakeholders. Case studies demonstrate that the issue lies not only in the risks themselves but also in the distribution of risks and benefits. Therefore, financial participation models have become popular in addressing acceptance issues. In this presentation, we will introduce different motivations for financial participation based on a questionnaire survey conducted with investors in community RE projects.

In addition to these monetary benefit-sharing models, there are also practices that bring external benefits to local communities by fostering connections between rural and urban citizens. One notable case is a project by a consumer cooperative in Tokyo, which aims to establish a fair partnership with the region and support local agricultural products. Through the development of additional external benefits, distributional issues can be addressed. We would like to define this type of external benefit as «expanded distributional justice» and discuss its potential contribution to achieving a just transition.

¹ Sovacool, B.; Dworkin, M. (eds). Global Energy Justice 2014, Cambridge University Press. ISBN 9781107665088

² Wüstenhagen, R; Wolsink, M; Bürer, M.J.. Social acceptance of renewable energy innovation: An introduction to the concept, Energy Policy, Volume 35, Issue 5, May 2007, Pages 2683-2691

Thierry Burger-Helmchen

BETA / FACULTY OF ECONOMICS AND MANAGEMENT / UNIVERSITY OF STRASBOURG



EDUCATION

- Thierry Burger-Helmchen is a professor in Management Science at the faculty of Economics and Management of the University of Strasbourg. He holds a PHD from the University of Strasbourg.
- He served as the dean of the Faculty of Economics and Management at Strasbourg. He is currently the deputy vice-president for learning and teaching at the University of Strasbourg (56,000 students) and in charge of the Pan-European MBA, a world-class MBA offered jointly with the University of York and the City College of Thessaloniki.

SCIENTIFIC INTEREST

- Thierry specializes in the management of innovation and technology, with a particular emphasis on innovation strategies, international innovation strategies, user innovation and communities, and capability development. Empirically, Thierry focuses on industries such as software, chemistry, automobile, and entertainment. He is the author of more than 50 articles in peer-reviewed journals and has published several books (textbooks and research books) on economics and management. His works appear in journals such as Long Range Planning, European International Management Journal, Management International, European Innovation Management Journal, Industry and Innovation, and others.
- Main keywords : Innovation, creativity, Management, Economics

RECENT PAPERS

- Fast & Curious Management, 2023, 3rd edition, Dunod.
- Innovation Policies and Practices within Innovation Ecosystems, 2022, with Catherine Beaudry and Patrick Cohendet, Routledge.
- Creative Management of Complex Systems, 2020, with Jean-Alain Heraud, Fionna Kerr, Wiley.
- Full list available at: https://beta-economics.fr/annuaire/18/burger-helmchen_thierry/

New Frontiers in Technology Management

THIERRY BURGER-HELMCHEN

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Technology management is a dynamic field that constantly evolves with the rapid advancement of technology. As we embrace the age of artificial intelligence (AI), it is imperative to understand the importance of exploring new frontiers in technology management. During his presentation, Professor Burger-Helmchen will highlight the significance of this topic, focusing on the integration of artificial intelligence (AI) into managerial practices. The presentation will cover the potential corporate and societal impact, including the solutions such technology can provide to sustainability-oriented problems.

The integration of AI into various industries has the potential to revolutionize how organizations operate, innovate, and deliver value. Some initial transformations have been observed through the development of Industry 4.0 and, more recently, Industry 5.0. AI offers advanced capabilities in data analytics, automation, and decision-making, providing organizations with opportunities to optimize processes, enhance productivity, and gain competitive advantages. However, along with these advancements come complex challenges that must be addressed to ensure responsible and sustainable implementation.

Managerial decision-making can greatly benefit from the integration of AI, especially in scenarios where a significant amount of data analysis and processing, complex statistical or mathematical modeling, evaluation of vast amounts of information from multiple sources that is too time-consuming for human capabilities, real-time analysis of data from multiple sources, and identification of patterns or anomalies in data that may not be apparent to humans are required. By leveraging AI in decision-making processes, managers could make more accurate, data-driven choices and improve efficiency...



Source: picture generated by midjourney: "A vision of a resourceful beaver entrepreneur working creating objects under the soft, inviting light of vintage Edison bulbs as unique technology"



Yi Cui

MATSUMOTO LAB (COMPUTATIONAL MECHANICS GROUP) / DEPARTMENT OF MECHANICAL SYSTEMS ENGINEERING / ENGINEERING SCHOOL / NAGOYA UNIVERSITY

EDUCATION

- September 2007-June 2010 : B.Sc., Theoretical and Applied Mechanics, Fudan University
- September 2010-June 2013 : M.Sc., Solid mechanics, Fudan University
- January 2014-July 2017 Ph.D., Solid Mechanics, University of Alberta on the subject of "Improved fission gas model and its application" on the subject of "Molecular dynamics insights into nanovoid behavior in metals: from sparsely-arranged nanovoids to densely-arranged nanopores"

SCIENTIFIC INTEREST

- Dislocation theory; Computational Mechanics; Molecular dynamics simulation; Plasticity; Ductile fracture; Topology optimization

RECENT PAPERS

- Yi Cui, et al., "An exact volume constraint method for topology optimization via reaction-diffusion equation" Computers & Structures 280 (2023) 106986.
- Yi Cui, et al., "A time-saving FEM-based approach for structural topology optimization with exact boundary representation" Mechanical Engineering Journal 9 (2022) 22-00281.
- Yi Cui, et al., "Nanotwinning and tensile behavior in cold-welded high-entropy-alloy nanowires." Nanotechnology 2021
- Yi Cui, et al., "The deformation mechanism in cold-welded gold nanowires due to dislocation emission." Computational Materials Science, Vol. 188, pp. 110214. February, 2021.
- Yi Cui, et al., "True origin of the size effect in cold-welded metallic nanocrystals" International Journal of Mechanical Sciences, Vol. 187, pp. 106102. December 2020.
- Yi Cui, et al., "High-strain-rate void growth in high entropy alloys: suppressed dislocation emission = suppressed void growth", Scripta Materialia, Vol. 185, pp. 12-18. August 2020.
- Yi Cui, et al., "Atomistic treatment of periodic gold nanowire array nanofasteners under shear loading", Nanotechnology, Vol. 31, December 2019.
- Yi Cui, et al., "Mass transfer and morphology change via dislocation emission in a macroporous FCC metal" Materials Letters, Vol. 247, pp 67-70, July, 2019.
- Yi Cui, et al., "Fundamental insights into the mass transfer via full dislocation loops due to alternative surface cuts" International Journal of Solid and Structure, Vol. 161, pp 42-54, April, 2019.
- Yi Cui, Zengtao Chen, Yang Ju. "New mechanisms of helical dislocation formation via the pinch-off process near a nano-inhomogeneity" Computational Materials Science, Vol. 155, pp 400-409 December, 2018.

On the dislocation-induced mass transfer mechanism in nanostructured metallic materials

YI CUI

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[HTTP://WWW.MATSUMOTO.NUEM.NAGOYA-U.AC.JP/MATSLAB/2022/INDEX-J.HTML](http://WWW.MATSUMOTO.NUEM.NAGOYA-U.AC.JP/MATSLAB/2022/INDEX-J.HTML)

Dislocation emission is considered the primary cause of void growth under a high strain rate. Two mechanisms regarding dislocation-related void growth have been proposed. One mechanism is through the emission of the prismatic loop and the other is through the shear loop. The shear dislocation loop, by definition, has its Burgers vector inside the loop plane. In contrast, the Burgers vector of a prismatic dislocation loop is not in the loop plane. A pivotal "shear impossibility" academic debate¹ regarding the mass transfer via dislocations. This debate was started between two high-profile U.S. research groups (both have publications in top-tier journals like Nature, Science, etc.). The debate itself occurred in the journal Acta Materialia and its sister journal Scripta Materialia. This 8-year-long debate is extremely important since it is fundamental to our understanding of dislocations. By innovatively relating the eigenstrain tensor of dislocations to a control volume, I established the critical understanding: Mass transfer can indeed be theoretically induced by shear dislocation loops. My detailed findings have been published in five scientific journals. The first was published in J. Appl. Phys., and the latest one to settle the debate was published in Scripta Materialia, the very journal where this debate started. The clarification of the debate that shear dislocation loops can drive nanowire growth not only allows a better understanding in the deformation of metals but also can inspire novel approaches to fabricate metallic nanostructures.

¹ Vasily V. B.; Wilhelm G. W.; Mukul K.. Scripta Materialia 2010, 64, 144.

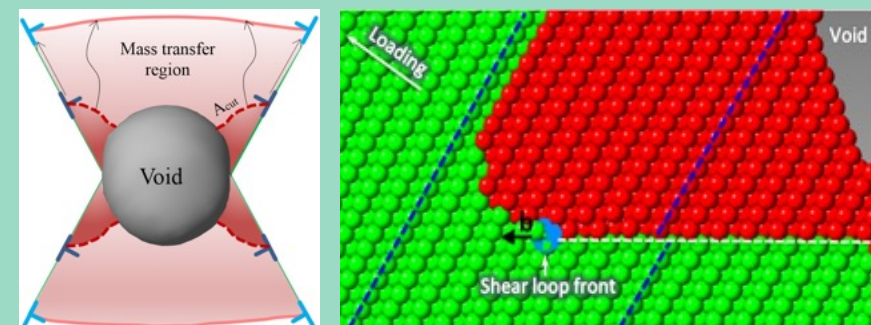


Fig. 1 The growth mechanism and the corresponding atomistic simulation.



Thomas Lampert

ICUBE / UNIVERSITY OF STRASBOURG

EDUCATION

- ✦ 2022, HDR in Computer Science, University of Strasbourg (France)
- ✦ 2006-2010, PhD in Computer Science, University of York (UK)
- ✦ 2004-2005, MSc in Autonomous Systems, University of Exeter (UK)
- ✦ 2001-2004, BSc (Hons) in Computer Science, University of Exeter (UK)

EXPERIENCE

- ✦ 2020—Now, Chair of Data Science and AI, University of Strasbourg
- ✦ 2022, International Visitor Leadership Program, US State Department
- ✦ 2017—2019, Post-doctoral Researcher, ICube, University of Strasbourg
- ✦ 2015—2016, Researcher, CNRS
- ✦ 2012—2015, Head of Research, Laboratoire Quantup, Strasbourg
- ✦ 2011—2013, Post-doctoral Researcher, ICube, University of Strasbourg
- ✦ 2009—2011, Research Assistant, Department of Computer Science, University of York, UK

SCIENTIFIC INTEREST

- ✦ Area: Machine Learning and Artificial Intelligence
- ✦ Keywords: Representation Learning, Deep Learning, Semi-Supervised Learning, Domain Adaptation, Constrained Clustering
- ✦ Data: Time-Series, Image, Video
- ✦ Research Goals: Reducing machine learning's reliance on labelled data

RECENT PAPERS

- ✦ J. Vasiljević, F. Feuerhake, C. Wemmert, and T. Lampert, 'Towards Histopathological Stain Invariance by Unsupervised Domain Augmentation using Generative Adversarial Networks', *Neurocomputing* 460: 277–291, 2021
- ✦ H. El Amouri, T. Lampert, P. Gañçarski, C. Mallet, Constrained DTW Preserving Shapelets for Explainable Time-Series Clustering, *Pattern Recognition*, accepted
- ✦ M. Obrenović, T. Lampert, M. Ivanović, and P. Gañçarski, 'Learning Domain Invariant Representations of Heterogeneous Image Data', *Machine Learning*, accepted
- ✦ T. Lampert, A. Stumpf, and P. Gañçarski, 'An Empirical Study into Annotator Agreement, Ground Truth Estimation, and Algorithm Evaluation', *IEEE Transactions on Image Processing* 25 (6): 2557–2572, 2016
- ✦ T. Lampert and P. Gañçarski, 'The Bane of Skew: Uncertain Ranks and Unrepresentative Precision', *Machine Learning* 97 (1-2): 5–32, 2014

Generative AI: Breaking Barriers and Borders

THOMAS LAMPERT

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In recent years, Generative Artificial Intelligence (AI) has witnessed remarkable progress, especially with the emergence of Large Language Models (LLMs). These LLMs are transformative technologies that have the potential to revolutionise various aspects of communication and access to information. This talk explores the tremendous impact of Generative AI, particularly LLMs, in facilitating communication, domain-specific applications, and knowledge dissemination, while also acknowledging the challenges and concerns associated with their usage.

The first part of the talk explores how Generative AI is facilitating cross-lingual communication and breaking language barriers. By leveraging LLMs, translation services have seen significant improvements in accuracy and fluency. This advancement not only fosters global connectivity but also enhances access to knowledge and culture, promoting inclusivity in the digital age. Furthermore, LLMs designed for specific domains, such as finance, coding, law, and data interpretation, are empowering the general public to harness complex concepts effectively.

However, these models have raised concerns about disinformation and the spread of misleading content. As LLMs become more powerful, the risk of generating realistic yet fabricated information escalates, potentially misleading individuals and even shaping public opinion. Source attribution becomes challenging, with generated content often lacking a clear origin, making it harder to discern genuine information from manipulated content. Moreover, the ability to understand if the generated content is accurate or trustworthy remains an open challenge. The limitations of current LLMs in discerning fact from fiction necessitate continuous research and vigilance to mitigate potential harm.

In conclusion, Generative AI, especially LLMs, holds great promise in transforming communication, accessibility, and information sharing across diverse domains. By harnessing their potential responsibly, we can reap immense benefits for society. However, we must also be mindful of the pitfalls, addressing issues of disinformation, source attribution, and content verification to ensure that these powerful technologies contribute positively to humanity's progress. Through interdisciplinary collaboration and ethical considerations, we can maximise the positive impact of Generative AI while safeguarding against its negative consequences.



Florence Tama

COMPUTATIONAL BIOPHYSICS / PHYSICS DEPARTMENT / GRADUATE SCHOOL OF SCIENCE

AND INSTITUTE TRANSFORMATIVE BIOMOLECULES / NAGOYA UNIVERSITY

EDUCATION

- ✦ B. S., 1996, University Paul Sabatier, Toulouse, France Major Field: Physics & Chemistry
- ✦ Ph. D., 2000, University Paul Sabatier, Toulouse, France, Major Field: Biophysics
- ✦ Dissertation Advisor: Y.H. Sanejouand
- ✦ Dissertation Title: Theoretical studies of large-scale motions in proteins
- ✦ Postdoctoral 2001-2005, The Scripps Research Institute, La Jolla, CA
- ✦ Postdoctoral Advisor: Charles L. Brooks III

SCIENTIFIC INTERESTS

- ✦ Biophysics is an interdisciplinary field of study that aims to understand biological phenomena using the principles and tools of physics, and chemistry. Our research group focuses on studying the structure and dynamics of biomolecules using tools from physics and chemistry with computational techniques.

Keywords:

- ✦ Computational Structural Biology
- ✦ Dynamics of biomolecules
- ✦ Integrative Dynamic Structural Biology

RECENT PAPERS

- ✦ Vuillemot, R.; Mirzaei, A.; Harastani, M.; Hamitouche, I.; Frechin, L.; Klaholz, B.P.; Miyashita, O.; Tama, F.; Rouiller, I.; Jonic, S. J. Mol. Biol. 2023 435 (9), 167951
- ✦ Isoda, R.; Palmai, Z.; Yoshinari, A.; Chen, L.Q.; Tama, F.; Frommer, W.B.; Nakamura M. PNAS 2022 119 (42), e2207558119
- ✦ Nakano, M.; Miyashita, O.; Joti, Y.; Suzuki, A.; Mitomo, H.; Niida, Y.; Yang, Y.; Yumoto, H.; Koyama, T.; Tono, K.; Ohashi, H.; Yabash, M.; Ishikawa, T.; Bessho, Y.; Ijiri, K.; Nishino, Y.; Tama F. Optica 2022 9 (7), 776
- ✦ Kuzuya, M.; Hirano, H.; Hayashida, K.; Watanabe, M.; Kobayashi, K.; Terada, T.; Mahmood, Md. I.; Tama, F.; Tani, K.; Fujiyoshi, Y.; Oshima, A. Science Signaling 2022 15 720, eabg6941
- ✦ Dasgupta, B.; Miyashita, O.; Uchihashi, T.; Tama, F. Front Mol Biosci 2021 8, 704274
- ✦ Fribourgh J.L.; Srivastava A.; Sandate C.R.; Michael A.K.; Hsu P.L.; Rakers C.; Nguyen L.T.; Megan Torgrimson R.; Parico G.C.G.; Tripathi S.; Zheng N.; Lander G.C.; Hirota T.; Tama F.; Partch C.L. Elife 2020 9 e55275

Breaking Barriers: Research in Biophysics through Interdisciplinary and International Collaborations

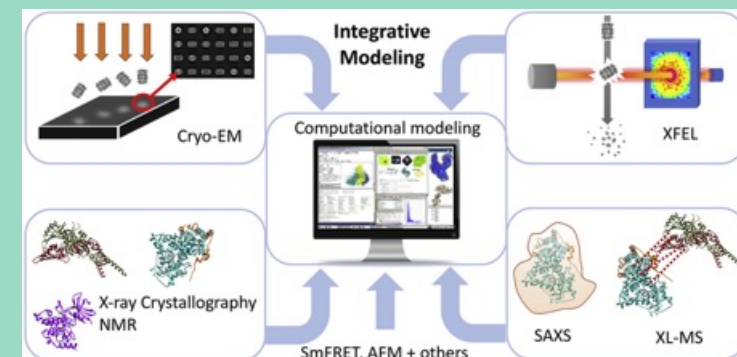
FLORENCE TAMA

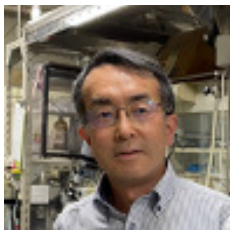
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Biophysics seeks to comprehend biological phenomena by applying the principles and methodologies of physics. Biomolecules, which are made up of structured groups of proteins and nucleic acids, are crucial for various essential functions in cells, and their dysfunctions often lead to severe diseases. To gain insights into these diseases and develop potential treatments, it is vital to elucidate the underlying functional mechanisms of these biomolecules. A critical step in this endeavor involves characterizing their structures and motions (dynamics).

Presently, atomic-level structures of biomolecules, i.e., high resolution, are primarily determined using X-ray crystallography and cryo-electron microscopy experimental techniques. However, certain vital biological systems pose challenges in characterizing their structure but also their dynamics, necessitating the use of alternative methods such as small-angle X-ray scattering, and atomic force microscopy, among others. While these techniques provide additional information, they generally yield low-resolution structural details, such as the overall shapes of complexes. In our research, we employ computational techniques that leverage fundamental concepts from physics, particularly mechanics, to simulate the motions of biomolecules. Additionally, we develop algorithms such as hybrid approaches that integrate various experimental data into the modeling process. Through collaborations with experimental groups, our aim is to apply these tools to investigate biomolecules and unravel their intricate workings.





Toshio Nishikawa

LABORATORY OF ORGANIC CHEMISTRY / GRADUATE SCHOOL OF

BIOAGRICULTURAL SCIENCES / NAGOYA UNIVERSITY

EDUCATION

- Natural product chemistry: organic synthesis of bioactive natural products (secondary metabolites)
- Keywords: organic synthesis, natural products, natural toxin such as pufferfish, mushroom, and marine organisms.

RECENT PAPERS

- Uenoyama, R.; Miyazaki, T.; Adachi, M.; Nishikawa, T.; Hurst, L. J.; Miyazaki, M. Domestic cat damage to plant leaves containing iridoids enhances chemical repellency to pests, *iScience* 2022, 25, 104455.
- Noguchi, Y.; Suzuki, T.; Matsutani, K.; Sakakibara, R.; Nakahigashi, R.; Adachi, M.; Nishikawa, T.; Abe, H. An almost nontoxic tetrodotoxin analog, 5,6,11-trideoxytetrodotoxin, as an odorant for the grass puffer, *Sci. Rep.* 2022, article No. 15087.
- Uenoyama, R.; Miyazaki, T.; Hurst, J.; Beynon, R. J. Adachi, M.; Murooka, T.; Onoda, I.; Miyazawa, Y.; Katayama, R.; Yamashita, T.; Nishikawa, T.; Miyazaki, M. The characteristic response of domestic cats to plant iridoids allows them to gain chemical defense against mosquitoes *Science Advances* 2021, eabd9135
- Niki, M.; Hirata, Y.; Nakazaki, A.; Wu, J.; Kawagishi, H.; Nishikawa, T. Biomimetic Synthesis of Chaxine and its Related Compounds. *J. Org. Chem.* 2020, 85, 4848–4860
- Nishikawa, T.; Isobe, M. Synthesis of Tetrodotoxin, Classic but Still Fascinating Natural Product, *Chem. Rec.* 2013, 13, 286–302.

Collective synthesis of natural products for elucidation of their new biological activities

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Natural products (secondary metabolites) exhibiting unique and potent biological activities have played a significant role not only in drug discovery but also in the development of life sciences. However, biological activities of the most of natural products isolated so far have not been fully investigated, because of their small amounts isolated from natural sources. To explore their new and unique biological functions, we have developed methodologies for collective synthesis of several natural products. In this symposium, collective synthesis of natural products described below and our efforts to explore their new biological activities will be presented.

Tetrodotoxin (TTX) is a toxic principle of pufferfish intoxication. More than thirty analogs have been isolated, however, most of the analogs show weaker toxicities, their biological importance has not been clarified. We have synthesized about twenty naturally occurring analogs of tetrodotoxin¹⁾ among which we recently found that 5,6,11-trideoxyTTX, a nontoxic TTX analog, acts a potent attractant to puffer fishes.)

Chaxines are a highly oxygenated steroidal compounds isolated from a Chinese edible mushroom²⁾. We synthesized more than thirty analogs³⁾ and found that chaxine B promoted growth of mycelium of pine mushroom (Matsutake) with a special aroma, a culture-difficult mushroom.

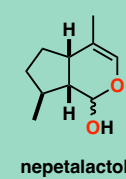
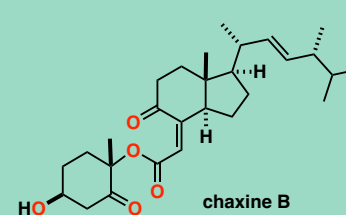
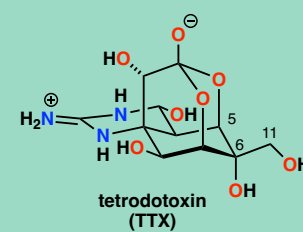
Iridoid lactones isolated from catnip or silver vine (Matatabi in Japanese) induce interesting behavior called catnip reaction (Matatabi dance in Japan). However, the mechanism and biological significance had not been elucidated until our recent study. We first found that nepetalactol is a new active compound in silver vine. The behavior study of the catnip reaction by using collectively synthesized iridoid compounds led us to conclude that rolling response transfers the iridoids from the plant to their head and face, the chemicals play a role of mosquito repellent.⁴⁾ Recent advances will also be discussed.

¹ Nishikawa, T.; Isobe, M. *Chem. Rec.* 2013, 13, 286.

² Noguchi, Y. et al. T.; Abe, *Sci. Rep.* 2022, article No. 15087

³ Niki, M.; Hirata, Y.; Nakazaki, A.; Wu, J.; Kawagishi, H.; Nishikawa, T. *J. Org. Chem.* 2020, 85, 4848.

⁴ Uenoyama, R. et al. *Science Advances* 2021, eabd9135.





Catherine Schuster

INSTITUTE FOR RESEARCH ON VIRAL AND HEPATIC DISEASES

FACULTY OF MEDICINE / INSERM AND UNIVERSITY OF STRASBOURG

EDUCATION

- Dr Catherine Schuster obtained her PhD, in Molecular and Cellular Biology, at IBMC at the University of Strasbourg, on the regulation of human viruses gene expression. During her post-doctoral training her scientific interests were focused on RNA Pol III transcription and the identification and characterization of specific transcription factors. She obtained a tenured position in 1995 at the National Institute for Health and Medical Research (Inserm). In 2000, she joined the Institute of Virology, Strasbourg and started as young group leader on hepatitis C virus molecular biology.
- Since 2011, Dr Catherine Schuster is Director of Research at Inserm and is the Deputy Head of the Institute for Viral and liver diseases in Strasbourg including the laboratory of Excellence HepSYS

SCIENTIFIC INTERESTS

- Current research, include the molecular characterization of hepatic virus-host interactions, the role of lipid metabolism during hepatic life cycle and more recently the identification of new therapeutic avenues for chronic liver diseases and liver cancer.
- Since 2018, Dr Catherine Schuster is the Director of the Doctoral School for Life Sciences and Health from the University of Strasbourg. From 2018 to 2020, she was the nationwide coordinator for the evaluation of research in Life Science Environment and Health, for the High Council for Research and Higher Education. Since 2019, she is the Inserm scientific referent for the Regio Grand-Est, deeply involved in the implementation of Inserm national research strategies at Strasbourg University of Excellence and Lorraine University of Excellence.
- Hepatic liver diseases, human hepatic viruses, ex vivo models for liver therapy, personalized medicine

RECENT PAPERS

- Roehlen N, Schuster C et al. "Treatment of HCC with claudin-1-specific antibodies suppresses carcinogenic signaling and reprograms the tumor microenvironment." J Hepatol. 2023 78:343-355. doi: 10.1016/j.jhep.2022.10.011. PMID: 36309131
- Roehlen N, Schuster C et al. "A monoclonal antibody targeting nonjunctional claudin-1 inhibits fibrosis in patient-derived models by modulating cell plasticity" Sci Transl Med. 2022 14:eabj4221. doi: 10.1126/scitranslmed.abj4221.PMID: 36542691 # co-first
- Crouchet E, Schuster C et al. "Hepatocellular carcinoma chemoprevention by targeting the angiotensin-converting enzyme and EGFR transactivation". JCI Insight. 2022 Jul 8;7(13):e159254. doi: 10.1172/jci.insight.159254.

Beyond the frontiers for the cure of advanced liver diseases

CATHERINE SCHUSTER

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In developed countries, organ fibrosis accounts for up to 45% of death and is a major risk factor for tumor development across organs. In the liver, the major causes of liver fibrosis are chronic hepatitis B, B/D and C, alcoholic liver disease (ALD) and non-alcoholic steatohepatitis (NASH). Liver cancer develops mainly from fibrotic disease. The aging population combined with lifestyle changes, obesity, and diabetes result in a rapidly increasing number of patients with advanced liver diseases and hepatobiliary cancer world-wide. Novel therapeutic approaches for advanced liver diseases and cancer are needed to break the current plateau of approved therapies. Currently, no approved therapy exists to treat liver fibrosis. When fibrosis progresses to cancer, only a minority of patients are eligible for curative approaches. A major roadblock for the development of efficient anti-fibrotic therapies is the lack of model systems predicting treatment efficacy in patients. Since many compounds in clinical development target specifically human biology (such as monoclonal antibodies), patient-derived models expressing the human target are needed for fast-track development. To address these challenges, we develop next generation patient-derived models to advance the understanding of the disease biology of liver fibrosis in patients and identify, characterize, and accelerate the clinical translation of innovative therapies for the treatment of advanced liver fibrosis.



Peggy Ducoulombier

RESEARCH INSTITUTE CARRÉ DE MALBERG / LAW FACULTY / UNIVERSITY OF STRASBOURG

EDUCATION

- ✎ Since 2014 Professor of Public Law, University of Strasbourg, France
- ✎ 2012-2014 Professor of Public Law, Universities of Perpignan and Strasbourg, France
- ✎ 2011-2012 Lecturer in Public Law, University of Strasbourg, France
- ✎ 2009-2011 Lecturer, University of Aberdeen, United Kingdom
- ✎ 2008-2009 Lecturer, University of Keele, United Kingdom
- ✎ 2008: PhD, University of Strasbourg, Les conflits de droits fondamentaux dans la jurisprudence de la Cour européenne des droits de l'Homme (awarded René Cassin Prize)

SCIENTIFIC INTEREST

International and European Human Rights Law, Civil Liberties, Constitutional Law, Comparative Law

RECENT PAPERS

- ✎ « Too little, too late? Le réveil de l'article 18 par la Cour européenne des droits de l'Homme », in Liber Amicorum Robert Spano, Anthemis, 2022, p. 191-201.
- ✎ « Les droits de l'homme universels ont-ils besoin d'une Cour mondiale pour leur protection », in Droits de l'homme: quelle universalité?, F. Rognon (dir.), Strasbourg, P.U.S., 2022, p. 395-402.
- ✎ « Enough is Enough! A brief comment on ECtHR's case Burmych and others v. Ukraine, 12 october 2017 », in L'exécution des arrêts et décisions de la Cour européenne des droits de l'Homme, Pratiques et perspectives après la fin du processus d'Interlaken, C. Giannopoulos (dir.), Paris, Pedone, 2022, p. 73-83.
- ✎ « The Human Rights Act 1998 20 years on: Time for a reality check? », in Brexit, droits et libertés, V. Barbé, C. Koumpli (dir.), Bruxelles, Bruylant, 2022, p. 347-362.
- ✎ « Autant en emporte le vent? Retour sur l'interprétation globalisante de la Convention européenne des droits de l'Homme », in Défendre les libertés publiques, Mélanges en l'honneur de Patrick Wachsmann, Paris, Dalloz, 2021, p. 189-202.
- ✎ « La Cour européenne des droits de l'Homme et la critique de l'individualisme: de la pertinence d'un rééquilibrage entre droits individuels et intérêts collectifs », in Les soixante-dix ans de l'adoption de la Convention européenne des droits de l'Homme, enjeux et perspectives, L. Milano, K. Gabarczyk (dir.), Paris, Pedone, 2021, p. 129-141.
- ✎ « Satakunnan Markkinapörssi Oy and Satamedia Oy v. Finland and the notion of responsible journalism », in The rule of Law in Europe: Recent Challenges and Judicial Responses, M. Elósegui, A. Miron and I. Motoc (eds), Springer International Publishing, 2021, p. 229-248.
- ✎ « La protection de l'Etat de droit en période d'exception: l'exemple de la France en état d'urgence », in The rule of Law in Europe: Recent Challenges and Judicial Responses, M. Elósegui, A. Miron and I. Motoc (eds), Springer International Publishing, 2021, p. 33-48.

Human Rights as a frontier breaker?

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As Law is considered a science rooted in the domestic context, limited by natural and intellectual frontiers, Human Rights Law appears as an exception to the rule. In addition to being a vehicle for challenging classical divisions at the domestic level – in particular between private and public law, national and international law, human rights can be used to bring researchers closer throughout the world, allowing researchers to work on their systems from a common perspective, thanks to the definition of human rights as universal rights. Researchers, but also political actors and civil society, can assess their system in light on these international standards. However, challenges to the ideal of universality demonstrate that even universal Human Rights are not detached from the local context, revealing that the apparent common language of Human Rights Law can hide a more complex picture.



Nicolas Baumert

INSTITUTE OF LIBERAL ARTS AND SCIENCES

DEPARTMENT OF ACADEMIC WRITING EDUCATION / NAGOYA UNIVERSITY

EDUCATION

Nicolas Baumert is a Geographer. He holds a Master form Strasbourg University, an Agrégation, and a PhD from Sorbonne University (2009). He has been working as an Assistant Professor at the Department of Geography of Sorbonne University (Paris IV) from 2006 to 2010 and he's Associate Professor at the Institute of Liberal Arts and Science from Nagoya University since 2010. He specializes in the historical and cultural geography of Japan and his research focuses on food and drink, analyzing dietary practices from geo-cultural and identity perspectives. His recent work focuses on the relationship of societies to their environment via the food mediation and on the development of Geographical Indications in Japan.

SCIENTIFIC INTEREST

Historical and cultural geography, Food habits, Gastronomy, Terroir, Geographical Indications, Franco-Japanese comparative studies

RECENT PAPERS

- ✦ Nicolas Baumert & Vincent Moriniaux (eds.), Les échanges gastronomiques franco-japonais: fascination et complémentarité de deux médiations alimentaires (Franco-Japanese Gastronomic Exchanges: Fascination and Complementarity of two Food Mediations), Huninge, Presses universitaires Rhin & Danube, Collection « Europe-Japon », (to be published in september 2023)
- ✦ Nicolas Baumert, Le saké, une exception japonaise, Rennes, Tours, PUR-PUFR, 2011 (Shibuzawa-Claudel Prize 2011). Japanese translation: Sake Nihon ni dokutoku na mono : (trad. Terao Hitoshi & al.), Kyoto, Koyoshobo, 2022.
- ✦ Nicolas Baumert (ed.) Géographie Historique du Japon d'Edo et ses héritages (Historical Geography of Edo Japan and its legacies), Revue de Géographie Historique, n°9, Paris, RGH, 2016.
- ✦ Nicolas Baumert & Sylvie Guichard-Anguis (eds.), Désastres et Alimentation : le défi japonais (Disasters and Food culture: The Japanese challenge), Géographie et Cultures, n°86, Paris, L'Harmattan, 2014.
- ✦ Nicolas Baumert & Ikuhiro Fukuda, "The Raw and the Cooked in Japanese cuisine", Anthropology of food, n°15, 2021. <https://doi.org/10.4000/aof.12807>

Transcending food boundaries – From opposition to complementarity: the converging trajectories of French and Japanese gastronomic models

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Abstract: Although Japan and France share a mutual passion for culinary art, their gastronomic foundations generally inverted. For example, while the French tradition involves the consumption of food and wine together, with wines carefully chosen to complement their dishes, the Japanese approach entails simultaneous consumption of food and drink, pairing delicate preparations with sake in a riceless meal, with the aim of accentuating the subtle flavors of the beverage. The numerous differences between these two cultures, both geographically and culturally, raises questions regarding the remarkable vitality of gastronomic exchanges between them. How can we account for the fact that, more than a century and a half after their initial contact during Japan's opening to the West, these two gastronomies have not only overcome their initial disparities and boundaries but also engage in reciprocal influence, exchange, and even complementarity? It appears as, though an inherent attraction drives these culinary dialogues, with French cuisine progressively assimilating Japanese elements, while the French themselves adopt a more flexible dining style, characterized by modest portions and a proliferation of specialized restaurants offering simpler preparations. The cultural boundaries between Japan and France effortlessly transcend, as if driven by an intrinsic force. This presentation aims to examine the intricate relationship between the gastronomies of these two countries by drawing upon the rich literary corpus dedicated to the subject and leveraging the theoretical works of French geography pertaining to landscapes. Ultimately, the analysis will reveal that the two culinary cultures present themselves as symmetrical images, which, beyond their superficial differences, adhere to similar underlying principles of interaction with the geographic environment, thereby elucidating their inherent complementarity.

Hiroshi Amano

CENTER FOR INTEGRATED RESEARCH OF FUTURE ELECTRONICS (CIRFE) / INSTITUTE
OF MATERIALS AND SYSTEMS FOR SUSTAINABILITY (IMASS) / NAGOYA UNIVERSITY



EDUCATION

- ✦ 1983 Bachelor of Engineering from Nagoya University
- ✦ 1985 Master of Engineering from Nagoya University
- ✦ 1989 Doctor of Engineering from Nagoya University
- ✦ 2014 Nobel Prize in Physics

SCIENTIFIC INTERESTS

- ✦ III-Nitrides, Light emitting diode, Laser diode, High power device, High frequency device, Crystal growth of III-nitrides, Device physics

RECENT PAPERS

- ✦ Key temperature-dependent characteristics of AlGaN-based UV-C laser diode and demonstration of room-temperature continuous-wave lasing”, Z. Zhang, M. Kushimoto, A. Yoshikawa, K. Aoto, C. Sasaoka, L. J. Schowalter, and H. Amano, Appl. Phys. Lett., 121, 222103(2022).

Role of nitrides on the establishment of an earth-friendly, comfortable, convenient, and people-friendly society

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I would like to focus on the necessity of the research and development of wide bandgap and ultrawide bandgap semiconductors, especially GaN, AlN and their alloys as examples. The contributions of GaN and related materials in LED lighting for energy savings are huge. The applications of these materials systems are not limited to lighting. By replacing Si-based power IGBTs with GaN-based power devices, we can expect at least a 10% reduction in the total electricity consumption. GaN-based high-voltage power devices should become the key devices in establishing renewable-energy-based electricity grids because of their high-speed switching and high-voltage capability. GaN-based high-frequency and high-power transistors will provide a unique solution for realizing millimeter-wave and even THz wireless communication systems. By spatially modifying the alloy composition while maintaining the coherent growth, we can realize either a p-type or n-type layer without any impurity doping. These new types of doping, called distributed polarization doping (DPD), were applied to p-type AlGaIn with high Al composition, for which it had long been very difficult to realize a highly conducting p-layer by Mg doping. By a conventional Mg doping method, the emission wavelength of III-nitrides LDs was limited to 338 nm, while with the DPD method, LDs with emission wavelengths as short as 271.8 nm have been realized. Recently, the continuous-wave operation of DUV LDs at room temperature has been achieved. Using the DPD method, it is also possible to realize a p-n junction diode without any impurity-doped layer. In my presentation, the role of nitrides on the establishment of an earth-friendly, comfortable, convenient, and people-friendly society will be discussed.

Thomas Ebbesen

ISIS / UNIVERSITY OF STRASBOURG



EDUCATION

Thomas W. Ebbesen is a physical chemist born in Oslo, Norway. He was educated in the United States and France, receiving his bachelor degree from Oberlin College (USA) and his PhD from the Curie University in Paris. He then did research in both the US and Japan, most notably at the NEC Fundamental Research Laboratories, before returning to France in 1999 to help build a new institute (ISIS) at the University of Strasbourg. He is currently the director of the Jean-Marie Lehn Foundation and the Strasbourg Institute for Advanced Studies (www.usias.fr). He holds the chair of physical chemistry of light-matter interactions. The author of many papers and patents, Ebbesen has received numerous awards for his pioneering research on nanostructured materials including the 2014 Kavli Prize in Nanoscience. He is a member of the Norwegian Academy of Science and Letters and the French Academy of Science.

SCIENTIFIC INTEREST

- ↘ Light-matter interactions
- ↘ Physical chemistry

RECENT PAPERS

- ↘ F.J. Garcia-Vidal, C. Ciuti, T.W. Ebbesen, "Manipulating matter by strong coupling to vacuum fields" *Science* 373, eabd0336 (2021).
- ↘ K. Nagarajan, A. Thomas, T.W. Ebbesen, "Chemistry under vibrational strong coupling", *J. Am. Chem. Soc.* 143, 16877 (2021).

The Alchemy of Vacuum

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Over the past decade, the possibility of manipulating material and chemical properties by using hybrid light-matter states has stimulated considerable interest. Such hybrid light-matter states can be generated by strongly coupling the electronic or the vibrational transitions of a material, to the spatially confined electromagnetic field of an optical resonator. Most importantly, this occurs even in the dark because the coupling involves the zero-point electromagnetic fluctuations of the resonator, the vacuum field. After introducing the fundamental concepts, examples of modified properties of strongly coupled systems, such as chemical reactivity, charge and energy transport, and magnetism will be given to illustrate the broad potential of light-matter states.

Local organizing committee

- *Vincent Robert, Professor, Quantum Chemistry, Scientific coordinator*
- *Caroline Blatz, Assistant, France-Japan University House (MUFJ)*
- *Michèle Forté, Associate Professor, Economics*
- *Marie-Claire Lett, Emeritus Professor, Microbiology*
- *Yoichi Nakatani, Emeritus Professor, Chemistry, Chairman of the Japan Committee*

Chairpersons, University of Strasbourg

- *Catherine Florentz, Professor, Faculty of Life Sciences, IBMC, Vice-President Strategies and Developments*
- *Michèle Forté, Associate Professor, Labour Institute, Beta UMR 7522 CNRS, Director of the France-Japan University House (MUFJ)*
- *Paul-Antoine Hervieux, Professor, Institute of Physics and Chemistry of Materials (IPCMS), UMR 7504 CNRS*
- *Yoichi Nakatani, Emeritus Professor in Chemistry, Chairman of the Japan Committee*
- *Sandra Schaal, Professor, Department of Japanese Studies, Director of the Oriental, Slavic and Neo-Hellenic Studies Group (G.E.O., U.R. 1340)*
- *Laurent Schmitt, Professor, Faculty of Geography, Vice-President Sustainable Development and Corporate Responsibility*
- *Cédric Wemmert, Professor, Computer Science, Head of the SDC team of the Engineering, Computer and Imaging Sciences Laboratory*

