Curriculum Vitae

Yoshiaki Uchida

Graduate School of Engineering Science
Osaka University
Machikaneyama-cho, Toyonaka,
Osaka, Japan 560-8531
Born: Dec. 30, 1981, Chiba, Japan.

tel. +81-6-6850-6256
email: yuchida@cheng.es.osaka-u.ac.jp
http://www.cheng.es.osaka-u.ac.jp/nishiyamalabo/index.html

Research Interests

Organic Materials Chemistry, Soft Matter Physics and Physical Chemistry:
• Synthesis of Liquid Crystals Containing Nitroxide Radical Moieties
• Fabrication of Liquid Crystal Emulsions
• Electron Paramagnetic Resonance Spectroscopy of the Liquid Crystals
• Defect Structure in Liquid Crystals
• Magnetically Controlled Functional Materials
• Magnetically Manipulated Systems

Education

Kyoto University
Ph.D. in Human and Environmental Studies, 2009. (Advisor: Prof. R. Tamura).
Dissertation title: "Studies on Magnetic, Electric, and Optical Properties in the Condensed Phase of Nitroxide Radicals"
A.M. in Human and Environmental Studies, 2006.
Dissertation title: "Synthesis and Properties of Paramagnetic Organic Compounds"
B.S. in Integrated Human Studies with Honors, 2004

Employment

2008.4–2010.3 Research Fellow of the Japan Society for the Promotion of Science, Graduate School of Human and Environmental Studies, Kyoto University
2009.6-2010.3 Post-doc in Weitz Lab, School of Engineering and Applied Sciences, Harvard University
2010.4-2011.9 Research Fellow of the Japan Society for the Promotion of Science, Graduate School of Science, Kyoto University
2011.10-2012.3 Part-time Lecturer, Institute for the Promotion of Excellence in Higher Education, Kyoto University (concurrent post)
2011.10-2014.9 Assistant Professor, Graduate School of Engineering Science, Osaka University
2012.11-2013.1 Visiting Scholar in Weitz Lab, School of Engineering and Applied Sciences, Harvard University
2013.10-2017.3 Japan Science and Technology Agency, PRESTO (concurrent post)
2014.10- Associate Professor, Graduate School of Engineering Science, Osaka University

Societies

The Society of Chemical Engineers, Japan
American Chemical Society

The Chemical Society of Japan
The Physical Society of Japan
Japanese Liquid Crystal Society
International Liquid Crystal Society
Japanese Society for Molecular Science
The Society of Electron Spin Science and Technology
The Society of Polymer Science, Japan
Japan Zeolite Association

Awards

12) The JLCS Best Paper Award, Japanese Liquid Crystal Society, 2023. [Paper No. 114]
11) Osaka University Prize, Osaka University, 2020.
10) The Young Scientists' Award, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, 2020.
9) The JLCS Best Paper Award, Japanese Liquid Crystal Society, 2017. [Paper No. 44]
8) The SCEJ Award for Outstanding Young Researcher, The Society of Chemical Engineering, Japan, 2016.
7) Presidential Award for Encouragement, Osaka University, 2015.
6) Presidential Award for Encouragement, Osaka University, 2014.
5) SEST Young Investigator Award, The Society of Electron Spin Science and Technology, 2013.
4) SEST Excellent Presentation Award, The 51st Annual Meeting of the Society of Electron Spin Science and Technology, 2012.
3) The JLCS Best Paper Award, Japanese Liquid Crystal Society, 2011. [Paper No. 17]
2) The JLCS Young Researcher's Award, Japanese Liquid Crystal Society, 2009.
1) Poster Award, International Molecular Chirality Conference in Toyama, 2006.

Lectures

65) "コレステリック液晶シェルの構造と機能," 分子研研究会「キラリティが関連する動的現象」, 岡崎コンファレンスセンター, March 11, 2025.

64) "液晶らしくない液晶の物性 ―反応器にも使える液晶― ," 機能材料工学科課外講演, 防衛大学校, November 27, 2024.

63) "液晶の基礎と応用," 化学・生命大学院特別講義 II, 豊橋技術科学大学, June 28, 2024.

62) "Three-dimensionally printed microwell for observing single liquid crystalline shell," SPIE Photonics West OPTO, The Moscone Center, San Francisco, California, USA, January 31, 2024.

61) "液晶の基礎と応用," 化学・生命大学院特別講義 II, 豊橋技術科学大学, July 14, 2023.

60) "Cholesteric Liquid Crystalline Shells," Weitz Lab, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA, June 30, 2023.

59) "液晶を反応場とした材料のナノシート化," 第 412 回化学研究会セミナー, 福井大学工学部, December 6, 2022.

58) "Control of Size, Position and Orientation of Photonic LC Shells," OLC2021 Satellite Work Shop (SWS) 2022, Bankoku Shinryokan, Nago, Okinawa, Japan, September 26, 2022.

57) “液晶中の分子間相互作用,” 第 5 回 QLC 若手コロキウム「古典的液晶と量子液晶の関係探索」, Online (Zoom), November 25, 2021.

56) “分子の動きが目で見える「液晶」の仕組み,” 学問発見講座, 大阪府立茨木高等学校, Osaka, Japan, July 10, 2021.

55) “液晶の分子設計のための分子論,” 九州大学 IMI 共同利用・短期共同研究公開講演会「機能性液晶の探索に向けたトポロジー手法」, Online (Zoom), February 4, 2021.

54) “XMCD-PEEM による液晶観察—微弱な磁気相互作用のイメージング—,” 量子ビームによる表面界面の光機能探究研究会, Online (WebEx), October 9, 2020.

53) “テンプレートとしての液晶,” 講演会, Online (ZOOM), July 6, 2020.

52) “液晶の機械学習で見えてきたこと,” 講演会, Online (ZOOM), July 6, 2020.

51) “常磁性液晶へのスピン注入による新機能創出,” 新学術領域「量子液晶の物性科学」A01 班公募研究キックオフミーティング, Online (ZOOM), May 19, 2020.

50) “液晶の機能化の場としてのマイクロカプセルの開発~分業を超えた異分野融合~,” 講演会, 秩父小鹿野温泉旅館梁山泊, Ogano, Saitama, Japan, July 28, 2019.

49) “ソフトテンプレート法を用いた材料合成プロセス,” 講演会, 富士フイルム株式会社材料生産本部, Minamiashigara, Kanagawa, Japan, July 19, 2019.

48) “Importance of Molecular Mobility of Nitroxide Radical Liquid Crystals,” The 6th Awaji International Workshop on “Electron Spin Science & Technology: Biological and Materials Science Oriented Applications” (6th AWEST 2019), Awaji Yumebutai International Conference Center, Awaji, Hyogo, Japan, June 18, 2019.

47) “穴あきインク鋳型法を用いた規則性多孔体の開発,” 技術情報協会, 技術情報協会セミナールーム, Tokyo, Japan, April 22, 2019.

46) “Photonic Microcapsule with Magnetic LC Shell,” SPIE Photonics West OPTO, The Moscone Center, San Francisco, California, USA, February 3, 2019.

45) “ソフトテンプレート法による機能性材料の成形,” 第２回メディショナルナノテク研究会, キャンパスプラザ京都, Kyoto, Kyoto, Japan, October 19, 2018.

44) “Nanosheet Formation in Sandwich-like Reaction Field,” 9th Italian-Japanese Workshop on Liquid Crystals, Collegio Cairoli, Pavia, Italy, September 17, 2018.

43) “液晶の新しい物性を引き出すための階層間接続に基づく分子設計,” 液晶交流会, 岐阜大学サテライトキャンパス, Gifu, Gifu, Japan, September 3, 2018.

42) “Materials Synthesis in Liquid Crystal,” Weitz Lab Group Meeting, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA, August 21, 2018.

41) “Functionalization by Self-Assembly in Soft Matter,” Seminar, Department of Chemistry, Queen's University, Kingston, Ontario, Canada, August 13, 2018.

40) “Complex fluids consisting of molecules communicating with each other,” The 2nd Joint Alumni Association of Tamura and Tsue Research Groups, 京都大学大学院人間・環境学研究科, Kyoto, Kyoto, Japan, May 19, 2018.

39) “分子集団の記憶とコミュニケーション,” 講演会, 大阪大学豊中キャンパス, Toyonaka, Osaka, Japan, April 4, 2018.

38) “新規ナノシート合成法が拓く次世代コスメティックテクノロジー,” 化粧品開発展アカデミックフォーラム, 幕張メッセ, Chiba, Chiba, Japan, January 25, 2018.

37) “液晶の特徴と機能―配向と流動性は使いよう,” 講演会, 北里大学相模原キャンパス, Sagamihara, Kanagawa, Japan, January 24, 2018.

36) “Fabrication and Functions of Liquid Crystalline Microcapsules,” Progress In Electromagnetics Research Symposium, Nanyang Technological University, Singapore, November 20, 2017.

35) “ニトロキシドラジカル液晶シェル,” 第 7 回ソフトマター研究会, 京都大学吉田キャンパス, Kyoto, Japan, October 24, 2017.

34) “ソフトマターにおけるラジカルの磁気スイッチ機能,” 「パラダイム変化を導く有機開殻系機能分子種の創製と制御」に関するシンポジウム, 京都大学宇治キャンパス, Kyoto, Japan, September 16, 2017.

33) “Magnetically Controllable Liquid Crystalline Shell,” Invited Seminar at the CNR Institute of Membrane Technology, Padova Section, Padova, Italy, September 8, 2017.

32) “液晶マイクロカプセルの多彩な機能,” 第 161 回東海高分子研究会講演会, 西浦温泉ホテルたつき, Aichi, Japan, September 2, 2017.

31) “ディスプレイに続く「液晶」の展開,” 第 39 回公開講座, 大阪大学基礎工学部, Osaka, Japan, August 2, 2017.

30) “分子材料の相転移挙動の予測,” PresTop 第 1 回ミーティング, 京都大学, Kyoto, Japan, August 1, 2017.

29) “ディスプレイに使うだけではもったいない「液晶」の多彩な機能,” 学問発見講座, 大阪府立茨木高等学校, Osaka, Japan, July 15, 2017.

28) “Liquid Crystalline Shell: as a Material and as a Field,” Physics Seminar, Room BSC 1.04, Campus Limpertsberg, The University of Luxembourg, Luxembourg, Luxembourg, March 20, 2017.

27) “機能性流体マイクロカプセルの作製法の開発とその応用に関する研究,” 化学工学会第 82 年会, 芝浦工業大学, Tokyo, Japan, March 7, 2017.

26) “機能性材料合成のためのソフトテンプレート法,” 高分子同友会勉強会, 高分子同友会会議室, Tokyo, Japan, February 20, 2017.

25) “三次元規則性多孔ポリマー,” メディカルジャパン 2017 大阪 研究成果企業化促進セミナー, インテックス大阪, Osaka, Japan, February 17, 2017.

24) “Nanosheet Synthesis in Hyperswollen Lyotropic Lamellar Phase,” The 12th International Conference on Nano-Molecular Electronics, Kobe International Conference Center, Kobe, Japan, December 14, 2016.

23) “液晶エマルションの自己組織的構造形成と機能発現,” 日本学術振興会情報用有機材料第 142 委員会合同研究会, PORTA 神楽坂, Tokyo, Japan, November 18, 2016.

22) “磁気液晶効果とフォトニック構造を利用した有機磁気光学素子の開発,” 第 6 回 CSJ 化学フェスタ, タワーホール船堀, Tokyo, Japan, November 16, 2016.

21) “ソフトテンプレートを用いた機能性材料合成,” 講演会, 日本合成化学工業株式会社, Ibaraki, Osaka, Japan, October 24, 2016.

20) “マイクロ流体デバイスを用いた三次元規則性多孔フィルムの作製,” 内田幸明, 岩井陽典, 西山憲和, 藪浩, 第 65 回高分子討論会, 神奈川大学横浜キャンパス, Yokohama, Kanagawa, Japan, September 15, 2016.

19) “Cholesteric Liquid Crystalline Microcapsule as Multifunctional Photonic System,” The 8th Japanese-Italian Liquid Crystal Workshop, Kyoto International Conference House (Kokoka), Kyoto, Japan, July 5, 2016.

18) “ニトロキシドラジカル液晶の分子設計と物性,” 第 20 回液晶化学研究会シンポジウム, 東京大学山上会館, Tokyo, Japan, July 4, 2016.

17) “ディスプレイを超える応用を指向した液晶材料開発における熱分析,” 有機合成分野・社内向け講演会, 島津共済会館, Kyoto, Japan, June 4, 2016.

16) “Magnetic Liquid Crystals without Metals,” Japan-Germany-Workshop on “Molecular Technology,” Wallstreet Hotel, Berlin, Germany, March 18, 2016.

15) “Organic Radical Fluids: Magnetism and Microfluidics,” Soft matter seminar, Sreda, Seminarska soba fizike, F5, IJS, Ljubljana, Slovenia, March 16, 2016.

14) “マイクロ流体デバイス,” 第 2 回 JST さきがけ「分子技術と新機能創出」研究者と JACI との交流会, 新化学技術推進協会, Tokyo, Japan, January 12, 2016.

13) “Inhomogeneity of Intermolecular Magnetic Interactions in Liquid Crystalline Phases of Nitroxide Radicals,” The International Chemical Congress of Pacific Basin Societies 2015, Hawaii Convention Center, Honolulu, HI, USA, December 19, 2015.

12) “Magnetic Interactions in Liquid Crystalline Phases of Nitroxide Radicals,” 1st International Caparica Christmas Congress on Translational Chemistry 2015, Aldeia dos Capuchos Golf & SPA, Caparica, Portugal, December 10, 2015.

11) “分業を超えた異分野融合を目指して,” 第 6 回さきがけ研究者交流会, JST 東京本部, Tokyo, Japan, August 1, 2015.

10) "Luminescence enhancement in cholesteric liquid crystalline microcapsules," EMN Qingdao Meeting 2015, Grand Regency Hotel, Qingdao, China, June 16, 2015.

9) "Magnetically-controllable all-organic droplets and capsules," the EMN Meeting on Droplets 2015, The Holiday Inn Resort Phuket, Phuket, Thailand, May 10, 2015.

8) "磁気液晶効果とフォトニック構造を利用した有機磁気光学素子の開発," 日本化学会第 95 春季年会, 日本大学, Funabashi, Chiba, Japan, March 27, 2015.

7) "Cholesteric liquid crystalline core-shell emulsion droplets," EMN Summer Meeting, The Westin Resort & Spa, Cancun, Mexico, June 11, 2014.

6) "液晶エマルションの自己組織的構造形成と光学的性質," 第 2 回自己組織化プロセスサロン, 関西大学飛鳥文化研究所, Nara, Japan, January 10, 2014.

5) "Nonuniform Intermolecular Magnetic Interactions in Nitroxide Radical Liquid Crystals," The 7th Japanese-Russian Workshop on Open Shell Compounds and Molecular Spin Devices, Awaji Yumebutai, Hyogo, Japan, November 19, 2013.

4) "常磁性有機ラジカル液晶の磁性に関する研究," 第 52 回電子スピンサイエンス学会年会, 奨励賞受賞記念講演, 大宮ソニックシティ―, Saitama, Japan, October 25, 2013.

3) "スピンを持つ有機化合物の液晶相における分子間相互作用," 第 1 回液晶若手勉強会, 田沢湖高原温泉郷プラザホテル山麓荘, Akita, Japan, September 27, 2013.

2) "Magnetic Interactions Observed in All-Organic Nitroxide Radical Liquid Crystals," MDF Workshop "Open-shell Organic Molecules― Synthesis and Electronic Structure Freedom", Umeda Sky Building, Osaka, Japan, October 7, 2011.

1) "Paramagnetic Liquid Crystals without Metals," Brandeis NRSEC Seminar, Brandeis University, Waltham, MA, March 11, 2010.

Papers

147) "Undemanding synthesis of N, P co-doped carbon nanosheets for hydrogen evolution reaction: Combining experimental quantitative analysis and DFT calculation corroboration," X. Yang, R. Takada, X. Li, K. Narimatsu, K. Miyake, Y. Uchida, N. Nishiyama, *J. Mater. Chem. A*, Royal Society of Chemistry, in press.

146) "Cr^{6+} Loaded Lewis Acidic Sn-Beta Zeolites as Reusable Catalysts for Selective Production of Light Olefins via Polyolefin Cracking," Shinya Kokuryo, S. Tsubota, K. Miyake, Y. Uchida, A. Mizusawa, T. Kubo, N. Nishiyama, *Adv. Sustain. Syst.*, Wiley, in press.

145) "Metal-free N, P-Codoped Carbon for Syngas Production with Tunable Composition via CO_2 Electrolysis: Addressing the Competition Between CO_2 Reduction and H_2 Evolution," R. Takada, H. Okada, K. Narimatsu, K. Miyake, Y. Uchida, E. Tsuji, N. Nishiyama, *ChemSusChem*, Wiley, in press.

144) "Low-Temperature Liquid-Crystalline Nitroxide Radical," Y. Uchida,* T. Akita, T. Ohkochi, X.-Q. Ma, D. Kiyohara, S. Nakagami, T. Yamazaki, N. Nishiyama, *J. Mater. Chem. C*, Royal Society of Chemistry, **13**, 54–60 (2025). **Inside Front Cover**

143) "Understanding the Role of the Surface Acidity of MFI Zeolites during LDPE Cracking: Decomposition Temperature and Product Distribution," S. Tsubota, S. Kokuryo, K. Miyake, Y. Uchida, A. Mizusawa, T. Kubo, N. Nishiyama, *ACS Catal.*, American Chemical Society, **14**, 18145–18155 (2024).

142) "Core–Shell-Structured Ni/ZSM-5@Silicalite-1 Zeolite Catalyst with a High Catalytic Performance for Ethylene to Propylene Reaction," S. Kubota, Y. Murata, K. Miyake, Y. Uchida, M. Miyamoto, N. Nishiyama, *Energy & Fuels*, American Chemical Society, **38**, 21268–21276 (2024).

141) "Cr-promoted Ni Catalyst on Dealuminated Zeolite for Producing Hydrogen via Catalytic Decomposition of Methane," K. Tamura, S. Kokuryo, H. Kitamura, J. A. Hernandez Gaitan, S. Tsubota, K. Miyake, Y. Uchida, M. Miyamoto, N. Nishiyama, *Ind. Eng. Chem. Res.*, American Chemical Society, **63**, 19449–19456 (2024).

140) "Nitrogen, fluorine, and phosphorus tri-doped porous carbon with high electrical conductivity as an excellent metal-free electrocatalyst for oxygen reduction reaction," R. Takada,* K. Narimatsu, Y. Taniguchi, X. Yang, K. Miyake,* Y. Uchida, N. Nishiyama, *ChemCatChem*, Wiley, **16**, e202400749 (2024).

139) "Ni Particle Morphology and Support Effect in the Catalytic Decomposition of Methane: Into the Design of Novel, High Yield Catalyst for Catalytic Decomposition of Methane," J. A. Hernandez Gaitan, X. Li, K. Tamura, K. Miyake,* Y. Uchida, N. Nishiyama, *Adv. Energy Sustainability Res.*, Wiley, **5**, 2400096 (2024).

138) "Selective Recovery of Light Olefins from Polyolefin Catalyzed by Lewis Acidic Sn-Beta Zeolites without Brønsted Acidity," S. Kokuryo,* K. Tamura, S. Tsubota, K. Miyake,* Y. Uchida, A. Mizusawa, T. Kubo, N. Nishiyama, *Catal. Sci. Technol.*, The Royal Society of Chemistry, **14**, 3589–3595 (2024).
Front Cover

137) "Straightforward synthesis of S-doped Co_2P nanoparticles on a P, S co-doped carbon substrate by using ion exchange resin for hydrogen evolution reaction," X. Yang, R. Takada, Y. Taniguchi, K. Miyake,* Y. Uchida, N. Nishiyama, *Fuel*, Elsevier, **370**, 131674 (2024).

136) "Exploring the effect of Brønsted acidity of MFI-type zeolites on catalytic cracking temperature of low density polyethylene," S. Tsubota, S. Kokuryo, K. Tamura, K. Miyake, Y. Uchida, A. Mizusawa, T. Kubo, N. Nishiyama, *Catal. Sci. Technol.*, The Royal Society of Chemistry, **14**, 1369–1374 (2024).

135) "Fluoropyridine-medicated zeolite templating method for N/F co-doped carbon with high electrocatalytic performance on oxygen reduction reaction," Y. Taniguchi, S. Kokuryo, R. Takada, X. Yang, K. Miyake,* Y. Uchida, N. Nishiyama, *Electrochem. Commun.*, Elsevier, **160**, 107665 (2024).

134) "Promoted propane dehydrogenation over Co confined within core-shell silicalite-1 zeolite crystals," S. Kubota, T. Sumi, H. Kitamura, K. Miyake, Y. Uchida, N. Nishiyama, *Catal. Sci. Technol.*, The Royal Society of Chemistry, **14**, 1201–1208 (2024).

133) "Synthesis of pyridinic N-rich N-doped carbon by a zeolite template method using pyridine as a deposition source," Y. Taniguchi, S. Kokuryo, R. Takada, X. Yang, K. Miyake, Y. Uchida, N. Nishiyama, *Carbon Reports*, **3**, 11–17 (2024).

132) "Control of Composition and Surface Area of Aluminosilicates by Tuning Base Catalyst Concentration," J. A. Hernandez Gaitan, K. Sasaki, K. Miyake, Y. Uchida,* N. Nishiyama, *Chem. Lett.*,

The Chemical Society of Japan, **53**, upad034 (2024).

131) "Facile synthesis of carbon co-doped with nitrogen and phosphorus as metal-free electrocatalyst with precisely controlled pore structure and dual heteroatoms for oxygen reduction reaction," R. Takada,* Y. Shu, Y. Taniguchi, X. Yang, K. Miyake,* Y. Uchida, N. Nishiyama, *Carbon*, Elsevier, **218**, 118719 (2024).

130) "Facile Synthesis of N-Doped Metal-Free Catalysts for Oxygen Reduction Reaction via a Self-Sacrificed Template Method Using Zinc Amino-Acid Complex," Y, Shu, R. Takada, Y. Taniguchi, X. Yang, K. Miyake,* Y. Uchida, N. Nishiyama, *ACS Omega*, American Chemical Society, **8**, 46276–46283 (2023).

129) "Dry Reforming of Methane with Suppressed Carbon Deposition over Cr- and Ni-Loaded Dealuminated β Zeolites," K. Tamura, D. Murata, T. Sumi, S. Kokuryo, H. Kitamura, S. Tsubota, K. Miyake,* Y. Uchida, M. Miyamoto, N. Nishiyama, *Energy Fuels*, American Chemical Society, **37**, 18945–18951 (2023).

128) "Stable and selective conversion of ethylene to propylene and butylene using Ni-loaded dealuminated Beta zeolite catalyst," H. Kitamura, T. Sumi, S. Kubota, S. Kokuryo, K. Tamura, K. Miyake,* Y. Uchida, M. Miyamoto, N. Nishiyama, *Appl. Catal. A: Gen.*, Elsevier, **668**, 119429 (2023).

127) "Utilization of Deposited Coke on Zeolites During the Catalytic Cracking of Nitrogen-Containing Polymer for the Oxygen Reduction Reaction," S. Kokuryo,* Y. Shu, R. Takada, Y. Taniguchi, K. Miyake,* Y. Uchida, G. Alemany-Molina, E. Morallón, D. Cazorla-Amorós, N. Nishiyama, *Adv. Sustain. Syst.*, Wiley, **7**, 2370035 (2023). **Back Cover**

126) "Facile and Cost-effective Synthesis of CoP@N-doped Carbon with High Catalytic Performance for Electrochemical Hydrogen Evolution Reaction," X. Yang, Y. Shu, R. Takada, Y. Taniguchi, K. Miyake,* Y. Uchida, N. Nishiyama, *Chem. Asian J.*, Wiley, **18**, e202300534 (2023).

125) "Coking Reduction of Cr-loaded Beta Zeolite during Polymer Cracking: Hydrocracking of Aromatics by Synergistic Effect of Cr^{6+} and Zeolitic Acid Sites," S. Kokuryo,* K. Tamura, S. Tsubota, K. Miyake,* Y. Uchida, A. Mizusawa, T. Kubo, N. Nishiyama, *ChemCatChem*, Wiley, **15**, e202300461 (2023). **Front Cover**

124) "A zeolite templating method for fabricating edge site-enriched N-doped carbon materials," Y. Taniguchi, Y. Shu, R. Takada, K. Miyake,* Y. Uchida, N. Nishiyama, *Nanoscale Adv.*, The Royal Society of Chemistry, **5**, 4233–4239 (2023).

123) "Lasing Behavior of a Nematic Liquid Crystal Microdroplet Depending on Irradiation Position," Y. Uchida,* M. Kumazaki, T. Naruta, N. Nishiyama *Opt. Mater. Express*, Optical Society of America, **13**, 1609-1615 (2023).

122) "Experimental and Theoretical Elucidation of Metal-free Sulfur and Nitrogen Co-doped Porous Carbon Materials with an Efficient Synergistic Effect on the Oxygen Reduction Reaction," Y. Shu,* Y. Takada, R. Takada, Y. Taniguchi, K. Miyake,* Y. Uchida, C. Y. Kong, N. Nishiyama, *Adv. Mater. Interfaces*, Wiley-VCH, **10**, 2300088 (2023).

121) "Improved methane dehydroaromatization reaction over Mo and Cr co-doped ZSM-5 catalyst," K. Miyake,* T. Sumi, S. Kokuryo, H. Kitamura, J. A. Hernandez Gaitan, Y. Uchida, N. Nishiyama, *New J.*

Chem., The Royal Society of Chemistry, **47**, 6054–6057 (2023).

120) "Detection of alkali and alkaline earth metal ions using birefringence of hyperswollen lamellar phase," K. Sasaki, S. Matoba, Y. Uchida,* N. Nishiyama, *RSC Adv.*, The Royal Society of Chemistry, **13**, 4007–4010 (2023).

119) "Formation of Ni species anchored on silicalite-1 zeolite framework as a catalyst with high coke deposition resistance on dry reforming of methane," T. Sumi, D. Murata, H. Kitamura, S. Kubota, K. Miyake,* Y. Uchida, M. Miyamoto, N. Nishiyama, *Cryst. Growth Des.*, American Chemical Society, **23**, 3308–3313 (2023).

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