

Curriculum Vitae

Dr. Takashi NAKANISHI

Group Leader

Frontier Molecules Group ([FMG](#))

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Birthday: 19th Feb, 1974 (44 year's old)

Nationality: Japan

[h-index](#): 40, 105 peer reviewed publications



Takashi Nakanishi completed the doctoral course in shorter period at *Nagasaki University* (Japan) in 2000 under a supervision of Prof. N. Nakashima (who is currently the Prof. of Kyushu University). After JSPS postdoctoral researches at *Houston University* (USA, Prof. K. M. Kadish) and at *Oxford University* (UK, Prof. H. L. Anderson), he joined the *National Institute for Materials Science* (NIMS), Japan in 2004. Since 2016, he is the current position as a group leader of Frontier Molecules Group at International Center for Materials Nanoarchitectonics (MANA) in NIMS. In 2007-2010, he was also a group leader at the *Max Planck Institute of Colloids and Interfaces* (Germany, Prof. H. Möhwald), and in 2007-2011, he was a researcher of PRESTO (Prof. Yoshio Okamoto), Japan Science and Technology Agency. In 2011-2015 he was a visiting Professor at *Warsaw University of Technology* (Poland) and also in 2013-2014 was a visiting Associate Professor at *Institute for Molecular Science*, Okazaki. Since 2017, he is a visiting Professor at *Shenzhen University*, and since 2018 he is also a visiting Professor at *Hokkaido University* where he could take PhD students.

Major Research Interests

- Functional Organic Liquids with various functions, such as luminescence, spin and photoconductivity.
- Supramolecular chemistry including hierarchical molecular nano-architectures, polymorphism, soft matters, and fabrication of supramolecular assemblies.
- Fullerene chemistry including materialization and practical applications.
- Molecular electronic devices employing highly-functional molecules such as porphyrins, phthalocyanines, and metal coordination complexes.

Reviewer of Papers for

Nature, Nature Chemistry, Nature Communications, Scientific Reports, Communications Chemistry, Science Advances, Journal of the American Chemical Society, ACS Nano, Macromolecules, Langmuir, Chemistry of Materials, Journal of Physical Chemistry, ACS Applied Materials & Interfaces, Angew. Chem. Int. Ed., Advanced Functional Materials, Advanced Materials, Advanced Optical Materials, Small, Chemistry A European Journal, Chemistry An Asian Journal, ChemPhysChem, ChemPlusChem, Chemical Society Reviews, Chemical Science, Chemical Communications, Molecular Systems Design & Engineering, Nanoscale, Journal of Materials Chemistry A, Journal of Materials Chemistry C, Physical Chemistry Chemical Physics, Bulletin of the Chemical Society of Japan, Chemistry Letters, and others

Books (Edited)

- 1) *Supramolecular Soft Matter: Applications in Materials and Organic Electronics*

T. Nakanishi (Ed), John Wiley & Sons, Inc., 2011, 487 pages.

<https://onlinelibrary.wiley.com/doi/book/10.1002/9781118095331>

- 2) *Functional Organic Liquids*

T. Nakanishi (Ed), John Wiley & Sons, Inc., *in print*.

Publications (selected)

- 20) Supercooling of functional alkyl- π molecular liquids

F. Lu, K. Jang, I. Osica, K. Hagiwara, M. Yoshizawa, M. Ishii, Y. Chino, K. Ohta, K. Ludwichowska, K. J. Kurzydłowski, S. Ishihara, T. Nakanishi

Chem. Sci., 9 (33), 6774-6778 (2018). (*Hot Paper, Back Backside Cover*)

- 19) A Spin-Active, Electrochromic, Solvent-Free Molecular Liquid Based on Double-Decker Lutetium Phthalocyanines Bearing Long Branched Alkyl Chains

A. Zielinska, A. Takai, H. Sakurai, A. Saeki, M. Leonowicz, T. Nakanishi

Chem. Asian J., 13 (7), 770-774 (2018).

- 18) The effect of regioisomerism on the photophysical properties of alkylated-naphthalene liquids

B. Narayan, K. Nagura, T. Takaya, K. Iwata, A. Shinohara, H. Shinmori, H. Wang, Q. Li, X. Sun, H. Li, S. Ishihara, T. Nakanishi

Phys. Chem. Chem. Phys., 20 (5), 2970-2975 (2018). (*Front Backside Cover*)

- 17) A Guide to Design Functional Molecular Liquids with Tailorable Properties using Pyrene-Fluorescence as a Probe

F. Lu, T. Takaya, K. Iwata, I. Kawamura, A. Saeki, M. Ishii, K. Nagura, T. Nakanishi

- Sci. Rep.**, 7, 3416 (2017).
- 16) Exfoliation of Graphene and Assembly Formation with Alkylated-C₆₀: A Nanocarbon Hybrid towards Photo-Energy Conversion Electrode Devices
Y. Shen, A. Saeki, S. Seki, J.-O. Lee, J. Aimi, T. Nakanishi
Adv. Optical Mater., 3, 925-930 (2015).
- 15) Directed assembly of optoelectronically active alkyl- π -conjugated molecules by adding *n*-alkanes or π -conjugated species
M. J. Hollamby, M. Karny, P. H. H. Bomans, N. A. J. M. Sommerdijk, A. Saeki, S. Seki, H. Minamikawa, I. Grillo, B. R. Pauw, P. Brown, J. Eastoe, H. Möhwald, T. Nakanishi
Nature Chem., 6 (8), 690-696 (2014).
- 14) Alkylated-C₆₀ based soft materials: regulation of self-assembly and optoelectronic properties by chain branching
H. Li, S. S. Babu, S. T. Turner, D. Neher, M. J. Hollamby, T. Seki, S. Yagai, Y. Deguchi, H. Möhwald, T. Nakanishi
J. Mater. Chem. C, 1 (10), 1943-1951 (2013). (*Back Cover Picture*)
- 13) Nonvolatile liquid anthracenes for facile full-colour luminescence tuning at single blue-light excitation
S. S. Babu, M. J. Hollamby, J. Aimi, H. Ozawa, A. Saeki, S. Seki, K. Kobayashi, K. Hagiwara, M. Yoshizawa, H. Möhwald, T. Nakanishi
Nature Commun., 4:1969 (2013), doi: 10.1038/ncomms2969.
- 12) CdSe Nanocrystals/C₆₀-liquid composite material with enhanced photoelectrochemical performance
T. J. Kramer, S. S. Babu, A. Saeki, S. Seki, J. Aimi, T. Nakanishi
J. Mater. Chem., 22 (42), 22370-22373 (2012). (*Hot Paper in JMC Blog*)
- 11) Solvent-Free Luminescent Organic Liquids
S. S. Babu, J. Aimi, H. Ozawa, N. Shirahata, A. Saeki, S. Seki, A. Ajayaghosh, H. Möhwald, T. Nakanishi
Angew. Chem. Int. Ed., 51 (14), 3391-3395 (2012). (In **Nature**, 484, 9 (2012).)
- 10) Assembly of carbon nanotubes and alkylated fullerenes: nanocarbon hybrid towards photovoltaic applications
Y. Shen, J. S. Reparaz, M. R. Wagner, A. Hoffmann, C. Thomsen, J.-O Lee, S. Heeg, B. Hatting, S. Reich, A. Saeki, S. Seki, K. Yoshida, S. S. Babu, H. Möhwald, T. Nakanishi
Chem. Sci., 2 (11), 2243-2250 (2011).
- 9) Assembly of Fullerene-Carbon Nanotubes: Temperature Indicator for Photothermal Conversion
Y. Shen, A. G. Skirtach, T. Seki, S. Yagai, H. Li, H. Möhwald, T. Nakanishi

- J. Am. Chem. Soc.**, 132 (25), 8566-8568 (2010).
- 8) Self-Assembly Made Durable: Water-Repellent Materials Formed by Cross-Linking Fullerene Derivatives
J. Wang, Y. Shen, S. Kessel, P. Fernandes, K. Yoshida, S. Yagai, D. G. Kurth, H. Möhwald, T. Nakanishi
Angew. Chem. Int. Ed., 48 (12), 2166-2170 (2009).
- 7) Supramolecular Templates for Nanoflake-Metal Surfaces
Y. Shen, J. Wang, U. Kuhlmann, P. Hildebrandt, K. Ariga, H. Möhwald, D. G. Kurth, T. Nakanishi
Chem. Eur. J., 15 (12), 2763-2767 (2009). (*Front Cover Picture*)
- 6) Electron Transport and Electrochemistry of Mesomorphic Fullerenes with Long-Range Ordered Lamellae
T. Nakanishi, Y. Shen, J. Wang, S. Yagai, M. Funahashi, T. Kato, P. Fernandes, H. Möhwald, D. G. Kurth
J. Am. Chem. Soc., 130 (29), 9236-9237 (2008).
- 5) Nano-Carbon Superhydrophobic Surfaces Created from Fullerenes Based Hierarchical Supramolecular Assemblies
T. Nakanishi, T. Michinobu, K. Yoshida, N. Shirahata, K. Ariga, H. Möhwald, D. G. Kurth
Adv. Mater., 20 (3), 443-446 (2008).
- 4) Flower-Shaped Supramolecular Assemblies: Hierarchical Organization of a Fullerene Bearing Long Aliphatic Chains
T. Nakanishi, K. Ariga, T. Michinobu, K. Yoshida, H. Takahashi, T. Teranishi, H. Möhwald, D. G. Kurth
Small, 3 (12), 2019-2023 (2007). (*Front Cover Picture*)
- 3) Room Temperature Liquid Fullerenes: An Uncommon Morphology of C₆₀ Derivatives
T. Michinobu, T. Nakanishi, J. P. Hill, M. Funahashi, K. Ariga
J. Am. Chem. Soc., 128 (32), 10384-10385 (2006).
- 2) Perfectly Straight Nanowires of Fullerenes Bearing Long Alkyl-Chains on Graphite
T. Nakanishi, N. Miyashita, T. Michinobu, Y. Wakayama, T. Tsuruoka, K. Ariga, D. G. Kurth
J. Am. Chem. Soc., 128 (19), 6328-6329 (2006).
- 1) Hierarchical supramolecular fullerene architectures with controlled dimensionality
T. Nakanishi, W. Schmitt, T. Michinobu, D. G. Kurth, K. Ariga
Chem. Commun., (48), 5982-5984 (2005). (*Hot Article*)

Reviews (selected)

- 9) Frontier of solvent-free functional molecular liquids
A. Ghosh, T. Nakanishi
Chem. Commun., 53 (75), 10344-10357 (2017). (*Feature Article*)
- 8) Alkyl- π engineering in state control toward versatile optoelectronic soft materials
F. Lu, T. Nakanishi
Sci. Technol. Adv. Mater., 16 (1), 014805 (2015). (*Hot Paper*)
- 7) Fullerene assemblies toward photo-energy conversions
Y. Shen, T. Nakanishi
Phys. Chem. Chem. Phys., 16 (16), 7199-7204 (2014). (*Perspective*)
- 6) Controlled self-assembly of alkylated- π compounds for soft materials - Towards optical and optoelectronic applications
A. Zielinska, M. Leonowicz, H. Li, T. Nakanishi
Curr. Opin. Coll. Interface Sci., 19, 131-139 (2014).
- 5) Optoelectronic Functional Materials Based on Alkylated- π Molecules: Self-Assembled Architectures and Nonassembled Liquids
H. Li, J. Choi, T. Nakanishi
Langmuir, 29 (18), 5394-5406 (2013). (*Feature Article, Front Cover Picture*)
- 4) The power of branched chains: optimizing functional molecular materials
M. J. Hollamby, T. Nakanishi
J. Mater. Chem. C, 1 (39), 6178-6183 (2013). (*Highlight*)
- 3) Nonvolatile functional molecular liquids
S. S. Babu, T. Nakanishi
Chem. Commun., 49 (82), 9373-9382 (2013). (*Feature Article, Front Cover Picture*)
- 2) Recent progresses in morphology control of supramolecular fullerene assemblies and its applications
S. S. Babu, H. Möhwald, T. Nakanishi
Chem. Soc. Rev., 39 (11), 4021-4035 (2010). (*Front Cover Picture*)
- 1) Supramolecular soft and hard materials based on self-assembly algorithms of alkyl-conjugated fullerenes
T. Nakanishi
Chem. Commun., 46 (20), 3425-3436 (2010). (*Feature Article*)

Awards (selected)

- 8) The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, The Young Scientists' Prize, 2012, Japan.
- 7) The 5th Panel Exhibition of Scientific "Beauty", First Prize, 2011, Japan.
- 6) The Chemical Society of Japan Award for Young Chemists for 2009, Japan.
- 5) The Best Poster Award, E-MRS 2008 Spring Meeting, 2008, Strasbourg, France.
- 4) Award for Encouragement of Research of Materials Science, The IUMRS International Conference in Asia 2008, Japan.
- 3) Outstanding Young Research Award on the Division of Colloids and Surface Chemistry on the Chemical Society of Japan, 2008, Japan.
- 2) Outstanding Young Research Award on the Polymer Society of Japan, 2008, Japan.
- 1) Research Fellowships of the Japan Society for the Promotion of Science (JSPS) for Young Scientists, 2001 (PD) and 1998 (DC1), Japan.

Advisory Board Membership

- 1) *Molecular Systems Design & Engineering* (RSC)

Date: 1st, November, 2018