

NAME:

Hideyuki Nakanishi (Born 1/16/1980)

POSITION TITLE:

Postdoctoral Fellow (Professor Bartosz A. Grzybowski)

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Northwestern University

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EDUCATION:

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| 4/2004 – 3/2007 | Ph.D. | Department of Macromolecular Science and Engineering
Kyoto Institute of Technology, Matsugasaki, Kyoto, Japan
Advisor: Professor Qui Tran-Cong-Miyata
Thesis title: Generation and Manipulation of Ordered Structures in
Interpenetrating Polymer Networks by Using Photochemical Reactions |
| 4/2002 – 3/2004 | M.S. | Kyoto Institute of Technology, Matsugasaki, Kyoto, Japan |
| 4/1998 – 3/2002 | B.S. | Kyoto Institute of Technology, Matsugasaki, Kyoto, Japan |

HONORS:

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| 2006 | Distinguished Graduate Researcher Award, Kyoto Institute of Technology. |
| 2004 | Best Student Poster Award (“International Symposium on Polymer Physics”, Yunnan, China.) |

PROFESSIONAL EXPERIENCE:

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| 7/2007 – present | Postdoctoral Fellow, Northwestern University |
| 4/2007 – 6/2007 | Postdoctoral Researcher, Kyoto Institute of Technology |
| 8/2002 – 10/2002 | Visiting Scholar, Kansas State University (Professor Duy H. Hua) |

SCIENTIFIC INTERESTS:

Electronic devices for energy storage and conversion (memory devices, supercapacitors, photovoltaic cells), Metal nanoparticles, Polymer blends, Light-induced self-ordering of polymer mixtures, Photoresponsive organic/inorganic materials

PEER REVIEWED PUBLICATIONS:

From Northwestern University

- [14] Huda, S., Smouov, S. K., Nakanishi, H., Kowalczyk, B., Bishop, K. J. M. & Grzybowski, B. A. Nanoparticle monolayers on chemically inert surfaces exhibit antimicrobial properties through controlled ion release. submitted.
- [13] Nakanishi, H., Bishop, K. J. M., Kowalczyk, B., Nitzan, A., Weiss, E. A., Tretiakov, K. V., Apodaca, M. M., Klajn, R., Stoddart, J. F. & Grzybowski, B. A. Photoconductance and inverse photoconductance in films of functionalized metal nanoparticles. *Nature* in press.
- [12] Kowalczyk, B., Apodaca, M. M., Nakanishi, H., Smoukov, S. K. & Grzybowwski, B. A. Lift-off and micropatterning of mono- and multilayer nanoparticle films. *Small* in press.

From Kyoto Institute of Technology

- [11] Murata, K., Murata, T., Nakanishi, H., Norisuye, T. & Tran-Cong-Miyata, Q. Effects of light-induced regularity on the physical properties of multiphase polymers. *Macromol. Mater. Eng.* 294, 163-168 (2009).
- [10] Tran-Cong-Miyata, Q., Van-Pham, D.-T., Noma, K., Norisuye, T. & Nakanishi, H. The roles of reaction inhomogeneity in phase separation kinetics and morphology of reactive polymer blends. *Chin. J. Polym. Sci.* 27, 23-36 (2009).
- [9] Nakanishi, H., Satoh, M. & Tran-Cong-Miyata, Q. Hexagonal phase induced by a reversible photo-cross-link reaction in a polymer mixture undergoing phase separation. *Phys. Rev. E* 77, 020801 (2008).
- [8] Trinh, X.-A., Fukuda, J., Adachi, Y., Nakanishi, H., Norisuye, T. & Tran-Cong-Miyata, Q. Effects of elastic deformation on phase separation of a polymer blend driven by a reversible photo-cross-linking reaction. *Macromolecules* 40, 5566-5574 (2007).
- [7] Masunaga, A., Ishino, S., Nakanishi, H. and Tran-Cong-Miyata, Q. Phase separation kinetics and morphology of light-induced IPN confined in the micrometer scales. *Kobunshi Ronbunshu* 64, 294-300 (2007).
- [6] Nakanishi, H., Satoh, M., Norisuye, T. & Tran-Cong-Miyata, Q. Phase separation of interpenetrating polymer networks synthesized by using an autocatalytic reaction. *Macromolecules* 39, 9456-9466 (2006).

- [5] Nakanishi, H., Namikawa, N., Norisuye, T. & Tran-Cong-Miyata, Q. Interpenetrating polymer networks with spatially graded morphology controllable by uv-radiation curing. *Macromol. Symp.* 242, 157-164 (2006).
- [4] Ishino, S., Nakanishi, H., Norisuye, T., Tran-Cong-Miyata, Q. & Awatsuji, Y. Designing a polymer blend with phase separation tunable by visible light for computer-assisted irradiation experiments. *Macromol. Rapid Commun.* 27, 758-762 (2006).
- [3] Nakanishi, H., Namikawa, N., Norisuye, T. & Tran-Cong-Miyata Q. Autocatalytic phase separation and graded co-continuous morphology generated by photocuring. *Soft Matter* 2, 149-156 (2006).
- [2] Nakanishi, H., Namikawa, N., Norisuye, T. & Tran-Cong-Miyata, Q. Observation and analysis of 3-dimensional gradient morphology generated by photochemical reactions in IPNs. *Kobunshi Ronbunshu* 62, 519-522 (2005).
- [1] Nakanishi, H., Satoh, M., Norisuye, T. & Tran-Cong-Miyata, Q. Generation and manipulation of hierarchical morphology in interpenetrating polymer networks by using photochemical reactions. *Macromolecules* 37, 8495-8498 (2004).

BOOKS:

- [3] Tran-Cong-Miyata, Q. & Nakanishi, H. *Phase Separation and Morphology of Polymer Mixtures Driven by Light in Polymers, Liquids and Colloids in Electric Fields* Tsori, Y. & Steiner, U. Edts. (World Scientific, Singapore, 2009), Chapter 6.
- [2] Nakanishi, H., Norisuye, T. & Tran-Cong-Miyata Q. *Morphosynthesis in Polymeric Systems Using Photochemical Reactions in Molecular Nanodynamics* Fukumura, H. et al. Edts. (John Wiley, New York, 2009), Chapter 7.
- [1] Nakanishi, H. & Tran-Cong-Miyata, Q. *Phase-Separated Structures in Self-organized Nanomaterials* Shimomura, M. & Yamaguchi, T. Edts. (Frontier Publishing, Tokyo, 2007), Chapter 7.

NON-PEER-REVIEWED PUBLICATIONS:

- [4] Nakanishi, H. & Tran-Cong-Miyata Q. Light-induced self-ordering phenomena in polymer mixtures. *Kobunshi* 58, 1-4 (2009).
- [3] Nakanishi, H. & Tran-Cong-Miyata, Q. Controlling polymers morphology by using photochemical reactions and its applications to materials science. *Kino Zairyo* 28, 28-34 (2008).
- [2] Satoh, M., Nakanishi, H., Tomohisa, N. & Tran-Cong-Miyata, Q. Phase separation in reacting

soft matter (II): ordering by long-range interaction. *Bussei Kenkyu* 84, 925-926 (2005).

- [1] Namikawa, N., Nakanishi, H., Norisuye, T. & Tran-Cong-Miyata, Q. Phase separation in reacting soft matter (I): formation of co-continuous structures with spatial gradients. *Bussei Kenkyu* 84, 923-924 (2005).

PATENTS:

- [3] Tran-Cong-Miyata, Q., Ishino, S., Nakanishi, H. & Ueda, E. *Polymer Blend Materials with Fine Patterns and their Manufacture by Phase Separation*. Japanese Published Unexamined Patent Application No. 2007-238641 (9/20/2007), Japanese Patent Application No. 2006-058522 (3/3/2006).
- [2] Tran-Cong-Miyata, Q., Nakanishi, H. & Satoh, M. *Interpenetrating Polymer Networks Containing Hierarchy Structures and their Manufacture by Irradiating with UV*. Japanese Published Unexamined Patent Application No. 2007-191648 (8/2/2007), Japanese Patent Application No. 2006-13172 (1/20/2006).
- [1] Tran-Cong-Miyata, Q., Nakanishi, H. & Namikawa, N. *Co-continuous Structure Having Gradient Structure Continuous in the Depth Direction and its Manufacture*. Japanese Published Unexamined Patent Application No. 2006-321852 (11/30/1006), Japanese Patent Application No. 2005-144417 (5/17/2005).

INVITED LECTURES:

- [3] ACS Annual Meeting, Symposium on Nonlinear Dynamics in Polymeric Systems
“Hexagonal Phase Induced by a Reversible Photo-cross-link Reaction in a Polymer Mixture Undergoing Phase Separation” (New Orleans, LA, USA, 4/9/2008).
- [2] Japan-Korea Young Scientists Joint Symposium
“Hexagonal Phase Induced by Reversible Photo-cross-link Reaction in Interpenetrating Polymer Networks” (Kyoto Institute of Technology, Kyoto, Japan, 11/16/2006).
- [1] Kansai Soft Matter 1st Annual Meeting
“Experimental Verification of Structural Ordering in Phase Separation of Polymer Mixtures Undergoing Photo-cross-linking” (Yukawa Institute of Theoretical Physics, Kyoto, Japan, 3/10/2006).