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（1）Main Research Results

Phase-segregated Nanostructured Polymer Template Film
Several structural transcription and hybridization processes by using normally oriented hexagonal cylinder nanostructured thin films of amphiphilic liquid crystalline block copolymer have been demonstrated: Total wet 16-nm-periodic nanopatterning on Si wafer substrate through block copolymer mask with ion transport channels, gold and silver nanoparticle array with separately tunable diameter and periodicity by selective doping of metal sources and VUV treatment for polymer etching and photochemical reduction of the metal sources, lead nanopillar array, and so on. Order-order phase transition to form the normally oriented hexagonal cylindrical domain structure has been elucidated by both temperature-controlled AFM imaging and laboratory GISAXS measurement.

（2）List of Publications

1 Ryoko Watanabe, Kaori Kamata, and **Tomokazu Iyoda**
Nanodimple Arrays Fabricated on SiO2 Surface by Wet Etching through Block Copolymer Thin Films
Jpn. J. Appl. Phys., in press

2 Atsunori Mori, Junichi Shikuma, Motoi Kinoshita, Tomiki Ikeda, Masahiro Misaki, Yasukiyo Ueda, Motonori Komura, Sadayuki Asaoka, and **Tomokazu Iyoda**
Controlled Homeotropic and Homogeneous Orientations for Nanoscale Phase Separated Domain of Light Emitting Amphiphilic Block Copolymer bearing a 2,5-Diarylthiazole Moiety
Chem. Lett., **37**(3), 272-273 (2008).

3 Jingze Li, Kaori Kamata, and **Tomokazu Iyoda**
Tailored Ag Nanoparticle Array fabricated by Block Copolymer Photolithography
Thin Solid Films, **516**(9), 2577-2581. (2008)

4 Aihua Chen, Motonori Komura, Kaori Kamata, and **Tomokazu Iyoda**
Highly ordered arrays of mesoporous silica nanorods with tunable aspect ratios from block copolymer thin films
Adv. Mater., **20**(4), 763-767 (2008),.

5 Sadayuki Asaoka and **Tomokazu Iyoda**
Molecular Design of Donor-Acceptor-type Nanostructured Photovoltaic Cells in *"BOTTOM-UP NANOFABRICATION: Supramolecules, Self-Assemblies, and Organized Films",* Ed. Katsuhiko Ariga, American Scientific Publishers, in press (2008).

6 Souichirou Suzuki, Kaori Kamata, Hisao Yamauchi, and **Tomokazu Iyoda**
Selective doping of lead ions into normally aligned PEO cylindrical nanodomains in amphiphilic block copolymer thin films
Chem. Let., **36**(8), 978-979 (2007).

7 Jingze Li, Kaori Kamata, Shigeru Watanabe, and **Tomokazu Iyoda**
Template- and Vacuum-Ultraviolet-Assisted Fabrication of a Ag-Nanoparticle Array on Flexible and Rigid Substrates
Adv. Mater., **19**, 1267–1271 (2007).

8 Motonori Komura and **Tomokazu Iyoda**
AFM Cross-Sectional Imaging of Perpendicularly Oriented Nanocylinder Structures of Microphase-Separated Block Copolymer Films by Crystal-like

Cleavage.
Macromolecules., **40**(12), 4106-4108 (2007).

9 Shigeru Watanabe, Ryutaro Fujiwara, Masanori Hada, Yuka Okazaki, and **Tomokazu Iyoda**
Site-Specific Recognition of Nanophase-Separated Surfaces of Amphiphilic Block Copolymers by Hydrophilic and Hydrophobic Gold Nanoparticles
Angew. Chem. Int. Ed., **46**, 1120 –1123 (2007).

（3）Invited talk in international conferences

1. "Nano-Ionics in Phase-segregated Block Copolymer Films"
Tomokazu Iyoda, Jingze Li, and Kaori Kamata
International Conference on Materials for Advanced Technologies (ICMAT2007)
Symposium K: Nanostructures and Bulk Materials for Electrochemical Power Sources
July 1-6, 2007, Singapore

2. "Normally Oriented Nanocylinder Array Structures in Phase-Separated PEO-LC Block Copolymer Films"
Tomokazu Iyoda
Mini Symposium on Development and Characterization of New Functional Nanomaterials based on Block Copolymers
in 2007 Annual Meeting of The Polymer Society of Korea
April 12, 2007, Jeju, Korea

3. "Roll-to-Roll Processable Nanocylinder Array Template Films of PEO- LC Block Copolymers "
Tomokazu IYODA and Kaori KAMATA
Materials Today Asia 2007
September 2-5, 2007, Beijing

4. The 2nd International Symposium on Integrated Molecular and Macromolecular Materials
"Polypyridinium for Self-driven Molecular Wiring"
Tomokazu IYODA
October 25-27, 2007, Beijing