

## Practical nano-chemistry

This article has been downloaded from IOPscience. Please scroll down to see the full text article.

2006 Sci. Technol. Adv. Mater. 7 395

(<http://iopscience.iop.org/1468-6996/7/5/A01>)

View [the table of contents for this issue](#), or go to the [journal homepage](#) for more

### Download details:

IP Address: 38.107.179.213

The article was downloaded on 14/02/2012 at 23:34

Please note that [terms and conditions apply](#).



## Preface

## Practical nano-chemistry

“The Center for Practical NanoChemistry” at Waseda University was established in 2002 under the sponsorship of the 21st Century’s Center of Excellence program, which was proposed by the Ministry of Education, Culture, Sports, Science and Technology, Japan. Twenty-five Professors joined the Center along with the project leader, K. Tatsuta. The researchers at the Center have contributed their articles to the journal of “*Science and Technology of Advanced Materials*”(STAM). Four review articles and five original papers from them were collected in this special issue.

The aim of the 21COE program is to develop human resources that are capable of contributing to the growth of new industries and to promote the discovery of intellectual properties. This Center is focused on molecular science and nano-scale chemistry as the key component enabling the realization of new technologies and effective cooperation between the Center and industries. We expect that practical research with highly prioritized results will contribute to society’s needs in the world, which is based on the founding mission statement of our University, “practical utilization of academic knowledge.”

This Center is cooperatively organized of five groups: “Molecular Nano-Science”, “Nano-Synthetic Chemistry”, “Fine Chemical Engineering”, “Applied Nano-Chemistry” and “Nano-Electronics”, where 26 researchers collaborate beyond the boundaries of their specific fields.

The collaborative, multidisciplinary environment of our Center enhanced by researchers from various academic backgrounds encourages us to initiate inter-disciplinary research. Typical examples of purposeful research which has been conducted are as follows: novel electrochemical devices based on newly developed highly ordered mesoporous functional metals (T. Osaka, K. Kuroda and T. Momma); designing, fabrication and characterization of new micro-fuel cells, which is the result of inter-disciplinary research involving Electrochemical Micro-Nano Technology (Shoji, T. Osaka and T. Momma); artificial gill based on oxygen carrying membranes, which leads to extraction of oxygen from aqueous phase, i.e., an aqua lung (K. Sakai and H. Nishide); fabrication of well-ordered polymer nano-particles on nano-patterned substrates (I. Ohdomari and H. Nishide); and nanometer-thick bio-compatible adhesive plaster, as artificial platelets,

(S. Takeoka, T. Osaka and D. Niwa). Some of such collaborative research works are incorporated in this special issue, such as: “Development of microfabrication process of mesoporous Pt via “Solvent-Evaporation-Mediated Direct Physical Casting”; Selective deposition into sloped microchannels” (T. Momma, T. Osaka, K. Kuroda, et al.), and “Packing of Submicrometer-sized Polystyrene Particles within the Micrometer-sized Recessed Patterns on Silicon Substrate” (I. Ohdomari and H. Nishide.)

The Center for Practical NanoChemistry is also encouraging collaboration between the researchers of the Center and foreign research institutes. The Center has made agreements to cooperate with institutes, which are leading institutions in the world relating to the field of NanoChemistry. Such institutions include the Corrosion Research Center, University of Minnesota; Department of Chemistry, University of Rome; and the Center for Electro- and Photo-Responsive Molecules, Korea University. The purpose of such agreements is to promote an integrated international system of cooperation. It shall serve as an instrument for facilitating collaboration in developing basic science among mutually highly qualified researchers. It will enable the promotion of joint research, academic activities, exchange of faculty members, researchers, and graduate students, in addition to use of facilities, with the exchanging of academic and technical information and consultation. To exemplify, a contributed paper entitled “Poly(2-dephenylamino-1, 4-phenylenevinylene): Its Preparation via Chemical Vapor Deposition Polymerization” written by H. Nishide, and Prof. J. Jin, is practicable and purposeful research resulting from the collaborative efforts between our Center and researchers at the Korea University.

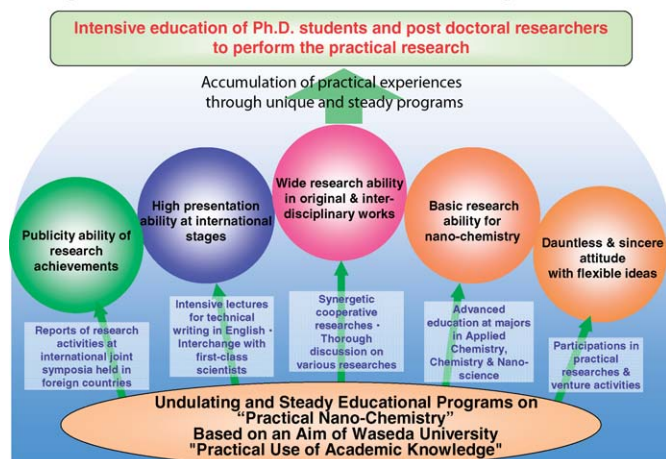
In addition to these institutes, the Center for Practical NanoChemistry has projects involving the mutual exchange of researchers with other research institutes to encourage collaboration. The Center has sent delegates including Ph.D. students, to the College of Chemistry, Peking University; Taiwan National University in Taipei; University of Montpellier; Brisbane University of Queensland; and the University of Southampton. These efforts are prospectively going to result in progressive research. Beyond this, many researchers are now interested in

visiting our Center and the University from all over the world.

The Center is also paying great efforts to give young scientists the potential to advance. While developing the research environment to the highest standards, the research and education programs, which focus primarily on post-doctoral researchers and Ph.D. students are also promoted. In depth discussions with and suggestions by world-class researchers invited to the Center encourage young scientists enrolled in academic programs. The center has devoted much effort to support young scientists regarding their individual research, progressive research experiences, and also to help in honing their presentation skills. S. Iwatsuki, a young scientist employed at the Center, reports his research “Kinetics and Mechanisms of the Axial Ligand Substitution Reactions of Platinum(III) Binuclear Complexes with Halide Ions” in this issue. Also, H. Sato, provides a review article entitled “Three-dimensional microfabrication processes using Si electrochemical etching” with T. Homma.

This special issue of “Practical Nano-Chemistry” published in “*Science and Technology of Advanced Materials*” represents some of the research progress our researchers have developed at the Center for Practical NanoChemistry at Waseda University.

### Programs for Promotion to worldwide Leading Researchers



Hiroyuki Nishide  
Kuniaki Tatsuta

*The Center for Practical NanoChemistry, Department of Applied Chemistry, School of Science and Engineering, Waseda University, 4-1, Okubo 3, Shinjuku, Tokyo 169-8555, Japan*

*E-mail addresses: nishide@waseda.jp (H. Nishide), tatsuta@waseda.jp (K. Tatsuta)*

Toshiyuki Momma

*The Center for Practical NanoChemistry, Graduate School of Science and Engineering, Waseda University, Wasedatsurumakicho 513, Shinjuku, Tokyo 162-0041, Japan*

*E-mail address: momma@waseda.jp*

