

Toyoko Imae

AFFILIATION:

(Since April 1, 2009) Honorary Chair Professor of Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taiwan, ROC

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and Joint Honorary Chair Professor of Department of Chemical Engineering, National Taiwan University of Science and Technology, Taiwan, ROC

(Since April 1, 2006) Professor Emeritus of Nagoya University, Japan

(Since October 1, 2011) Member of Science Council of Japan

ADDITIONAL TITLES:

(Since November 1, 2004) Committee member, Asian Society for Colloid and Surface Science

(Since May 1, 2006) Life membership of Society of Polymer Science, Japan

(Since May 1, 2006) Life membership of Chemical Society of Japan

(Since September 1, 2007) Committee Member of Asian Symposium on Advanced Materials

(Since October 1, 2009) Member of Women in Engineering (WIE) Committee World Federation of Engineering organizations (WFEO)

(Since October 1, 2013) Board Member of Japan Network of Women Engineers and Scientists (JNWES), Japan

(Since November 1, 2013) President of Asian Society for Colloid and Surface Science

(Since April 25, 2014) Fellow of Japan Oil Chemists' Society, Japan



Toyoko Imae was born in Japan. She joined the National Taiwan University of Science and Technology, Taiwan, as honorary chair professor in April 2009, immediately after retiring from Keio University, Japan. She is also professor emeritus of Nagoya University, Japan, since 2006 and a Specially-Appointed professor of Yamagata University (iFront Doctoral Program), Japan. Her major research areas are the fabrication, functionalization, and physicochemical investigation of nanomaterials, including polymers, nanoparticles, carbon materials, minerals and their composites. Her present research target is a “Nanoarchitecture and Nanotechnology” towards energy, environmental and biomedical sciences. Prof. Imae has published about 310 peer-reviewed journal articles, 25 reviews, 20 patents and 27 book chapters. She also edited three books of *Advanced Chemistry of Monolayers at Interfaces: Trends in Methodology and Technology* (2007), *Neutrons in Soft Matter* (2011) and *Skin Bioscience: A Molecular Approach* (2014). She has been conferred several awards as represented by “Promising Scientist Award of The Society of Japanese Women Scientists” (1999). She also contributes to the academic advancement as typified by a president of Asian Society for Colloid and Surface Science from 2013. Prof. Imae was an executive member of the Council for Science and Technology Policy in Japan and a member of International Experts Council (IEC) of the Republic of Kazakhstan and she is now a member of the Science Council of Japan.

Academic background

- 2015-2015 Specially-Appointed Professor of iFront Doctoral Program: Graduate School of Science and Engineering, Yamagata University, Japan
- 2013-2014 Academic Icon Visiting Professor: the Department of Pharmacology, Faculty of Medicine, University of Malaya, Malaysia
- 2013-2015 Visiting Professor under Research Platform Center Program: Tokyo University of Science, Japan
- 2010-present Joint Honorary Chair Professor : Department of Chemical Engineering, National Taiwan University of Science and Technology, Taiwan
- 2009-present Honorary Chair Professor : Graduate Institute of Advanced Science and Technology, National Taiwan University of Science and Technology, Taiwan
- 2006-2009 Special Research Professor : Keio Advanced Research Centers, Keio University, Japan
- 2006-2009 Vice-supervisor : Chulalongkorn University, Thailand 2006-present
- 2009-present Professor Emeritus : Nagoya University, Japan

1999-2006 Professor : Research Center for Materials Science, Nagoya University, Japan

1990-1999 Associate Professor : Department of Chemistry, Faculty of Science, Nagoya University, Japan

International and governmental commission

- 1) 2005/9~2011/9 Council Member of Science Council (CMSC) of Japan
- 2) 2006~2014 Field advisor of Japan Science and Technology Agency (JST)
- 3) 2007~2010 Member of International Experts Council (IEC) of the Republic of Kazakhstan
- 4) 2009~2013/1 Executive Member of Council for Science and Technology Policy (CSTP), Japan
- 5) 2009~2014 Member of Women in Engineering (WIE) committee World Federation of Engineering organizations (WFEO)
- 6) 2010~2012/3 Member of Japan committee, International Year of Chemistry 2011
- 7) 2010~2012 External valuation member of strategic research core constitution support project for Private University by Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
- 8) 2010~2014 Member of National University Cooperation Evaluation Committee in Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
- 9) 2011/10-present Member of Science Council (CMSC) of Japan

Representative awards and honors

- 1) 2014~present A Fellow of Japan Oil Chemists' Society, Japan
- 2) 2012 An Academic Award from Helical Science Society, Japan
- 3) 2009~2013 Executive Member of Council for Science and Technology Policy (CSTP), Japan
- 4) 2009 Award of Ministry of Environment for local environmental protection service, Japan
- 5) 2007~2010 Member of International Experts Council (IEC) of the Republic of Kazakhstan
- 6) 2006 Award of The Achievement for The Polymer Society of Japan
- 7) 2001 Award of The Japan Oil Chemists' Society, Japan
- 8) 1999 Promising Scientist Award of The Society of Japanese Women Scientists, Japan

Research Collaboration (with grant)

- 2015-2016 France-Taiwan Cooperative Research Project under MOST PHC ORCHID program (Marie Pierre Kraft, CNRS, France)
- 2013-2015 University of Malaya High Impact Research Grant (under collaborative research agreement (MOA)) (Lip Yong Chung and Lik Voon Kiew, University of Malaya, Malaysia)
- 2010-2012 DST/NSC Cooperative Research Project (Chivukula N. Murthy, The M. S. University of Baroda, India)
- 2010-2012 CSIC/NSC “FORMOSA PROGRAM” Cooperative Research Project (CRP) (Conxita Solans, Institut de Química Avançada de Catalunya (IQAC), CSIC, Spain)
- 2009-2010 CSIC/NSC “FORMOSA PROGRAM” Cooperative Research Project (CRP) (Conxita Solans, Institut de Química Avançada de Catalunya (IQAC), CSIC, Spain)

Chairperson of International Conference

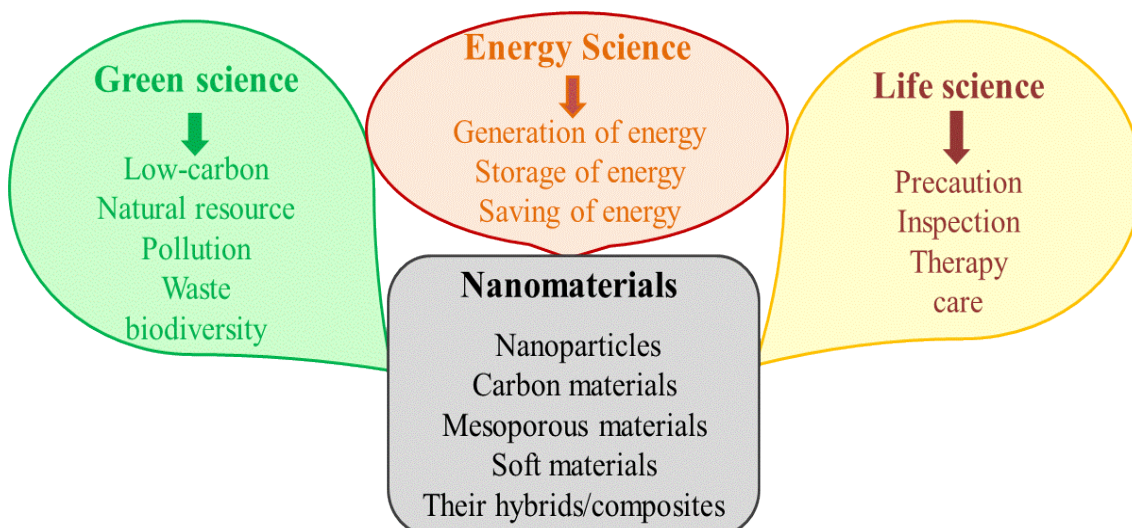
- 2015 July 22-25 International Conference of Colloids and Interface Science 2015, Taipei, Taiwan, Chairperson of Organizing Committee
- 2014 Nov 24-25 The International Conference on Nanocatalysts and Nanomaterials for Green Technologies, Taipei, Taiwan, Co-Chairperson of Organizing Committee
- 2013 Nov 22-25 The 4th Asian symposium on Advanced Materials – Chemistry, Physics & Biomedicine of Functional and Novel Materials (ASAM-4), Taipei, Taiwan, Chairperson of organizing committee
- 2011 Nov 21-22 International Workshop on “Novel Nanotechnology and Nanomaterials for “Science for Human” (2011)”, Taipei, Taiwan, Chairperson of organizing committee
- 2010 Nov 26 ‘International Workshop on “Novel Nanotechnology and Nanomaterials for “Science for Human” (2010)’ Taipei, Taiwan, Chairperson of organizing committee
- 2008 Aug 8-10 ‘Taiwan-Japan Joint Symposium’ in Taroko, Taiwan, Co-Chairperson of Organizing Committee
- 2007 July 17-19 ‘Japan-Taiwan Joint Symposium’ in Hakone, Japan, Chairperson of Organizing Committee
- 2005 Dec 7-9 ‘Asian Conference on Recent Trends in Colloid and Surface Science’ in Nagoya, Japan, Chairman of Organizing Committee
- 2000 Sept 21-22 ‘The Nagoya COE-RCMS Conference on Materials Science and Nanotechnology’ in Nagoya, Japan, Chairperson of Organizing Committee

Research filed

Nanoscience/nanotechnology, Polymer/materials science, Energy/Environmental/Biomedical Science, Photonics/plasmonics, energy production and storage (solar cell/fuel cell/capacitor), pollutant removal/decomposition (CO₂/sick-house gas), inspection and therapy (drug delivery system/phototherapy).

Research outline

Our group mainly focuses the target on the advanced nanomaterials for smart technology. The investigation is carried out using various materials such as soft materials (amphiphiles, block copolymers, and dendrimers), carbon materials (fullerenes, carbon nanotubes, carbon microcoils, graphenes and carbon nanohorns), nanoparticles (metal and metal oxide particles) and mineral materials (clays and porous materials). Such materials can be incorporated as components in the fabrication of functional hybrid and composite systems (nanoarchitecture). Thus prepared hybrids/composites are built up into systems, devices, and sensors, which are applicable to energy, photonics, environmental and biomedical sciences. Present projects are focused on (1) development of validated systems for energy production and storage, (2) architecting of advanced systems for air pollutant removal and decomposition and (3) fabrication of nanobiotechnological systems for inspection and therapy.



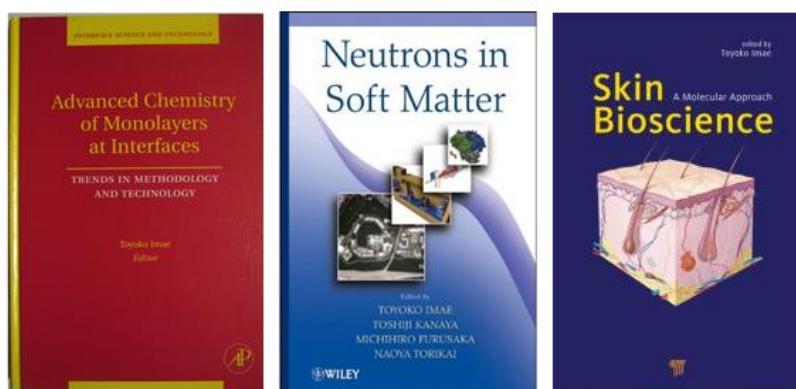
Publications (See attached publication list)

Original paper 310, edited monograph 3, book chapter 27, translation 1, review 23, newspaper press 2, TV release 1, patent >20, invited talk >150, H-index 36

Representative publications

edited monograph

- 1) **Advanced Chemistry of Monolayers at Interfaces – Trends in Methodology and Technology** –, Ed. by Toyoko Imae, Elsevier Science Publishers, Amsterdam, 2007.
- 2) **Neutrons in Soft Matter**, Eds. Toyoko Imae, Toshiji Kanaya, Michihiro Furusaka, and Naoya Torikai, John Wiley & Sons, Inc., Hoboken, New Jersey, 2011.
- 3) **Skin Bioscience: A Molecular Approach**, Ed. By Toyoko Imae, Pan Stanford Publishing Pte. Ltd., Singapore, 2014



Original paper (selected 5)

- 1) Intrinsically Fluorescent PAMAM Dendrimer as Gene Carrier and Nanoprobe for Nucleic Acids Delivery: Bioimaging and Transfection Study, Ya-Ju Tsai, Chao-Chin Hu, CHih-Chien Chu, and Toyoko Imae, *Biomacromolecules*, 2011, 12, 4283-4290.
- 2) Fabrication and Characterization of Dendrimer-Functionalized Mesoporous Hydroxyapatite, Nabakumar Pramanik, and Toyoko Imae, *Langmuir*, 2012, 28, 14018–14027.
- 3) Advantages of electrodes with dendrimer-protected platinum nanoparticles and carbon nanotubes for electrochemical methanol oxidation, Ampornphan Siriviriyanyun and Toyoko Imae, *Phys. Chem. Chem. Phys.*, 2013, 15, 4921-4929.
- 4) Massive-Exfoliation of Magnetic Graphene from Acceptor-Type GIC by Long-Chain Alkyl Amine, Masaki Ujihara, Mahmoud Mohamed Mahmoud Ahmed, Toyoko Imae and Yusuke Yamauchi, *J. Mater. Chem. A*, 2014, 2, 4244 - 4250.
- 5) Efficient surface enhanced Raman scattering on confetto-like gold nanoparticles-adsorbed self-assembled monolayers, Chia-Chi Chang, Toyoko Imae, Liang-Yih Chen and Masaki Ujihara *Phys. Chem. Chem. Phys.*, 2015, 17, 32328-32334.

Patent (selected 5)

- 1) [Japan 4670089] Preparation of intercellular lipid-mimetic substrate of skin corneum and valuation method of rough surface by using it, Takuya Saiwaki,

Takashi Oka, Yu-ichiro Mori, Toyoko Imae, Xiaojuan Wang, Masaki Ujihara

- 2) METHOD FOR MAKING CARBON NANOTUBE-LOADED ELECTRODE, CARBON NANOTUBE-LOADED ELECTRODE MADE BY THE METHOD; Toyoko Imae, Ampornphan Siriviriyanun; patent No. US 9,082,526 B2; 2015/07/14
- 3) BIOCOMPARTIBLE CONFETTO-LIKE GOLD NANOPARTICLES, METHOD FOR MAKING THE SAME, AND THEIR BIOMEDICAL APPLICATIONS; Masaki Ujihara, Toyoko Imae; No.US2013/0164842 A1 2013/06/27
- 4) FLUORESCENT HYBRID OF DENDRIMER AND GRAPHENE OXIDE, Toyoko Imae, Ampornphan Siriviriyanun, patent No. US 9,082,526 B2; 2015/07/14
- 5) NON-FLUORINATED COATING MATERIALS WITH ANTI-FINGERPRINT PROPERTY, AND EVALUATION METHOD THEREOF; Toyoko Imae, Ampornphan Siriviriyanun; No. US9,206,322 B2; 2015/12/8