

## **Dr. Liming Dai**

Kent Hale Smith Professor  
Director, Center of Advanced Science and Engineering for Carbon  
Department of Macromolecular Science and Engineering  
Department of Chemical Engineering  
Case School of Engineering, Case Western Reserve University  
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<http://engineering.case.edu/centers/afosrcasemuri>



*h-index: >70; Citations: ~ 20,000 (Source: ISI Web of Science; Author query: "Dai LM" and "Dai L")*

### **Education:**

Ph.D. in Chemistry, Australian National University, Australia, 1991.

B.Sc. in Chemical Engineering, Zhejiang University, China, 1983.

### **Current Position:**

Kent Hale Smith Professor; Department of Macromolecular Science and Engineering,  
Director, Center of Advanced Science and Engineering for Carbon (Case4Carbon),  
Case School of Engineering, Case Western Reserve  
University

### **Positions Held:**

August, 2004 – August, 2009, Wright Brothers Institute Endowed Chair  
Professor of Nanomaterials and Professor of Chemistry, College of Engineering,  
University of Dayton, USA

March, 2002 – August, 2004, Associate Professor of Polymer Engineering,  
College of Polymer Science and Polymer Engineering, University of Akron, USA

October, 1992 – March, 2002, Principal Research Scientist, Project Leader,  
Division of Molecular Science, The Commonwealth Scientific and Industrial  
Research Organisation (CSIRO), Clayton, Australia

June, 1992 -- October, 1992, Visiting Fellow, Department of Materials Science and  
Engineering, University of Illinois at Urbana-Champaign, Illinois, USA

June, 1990 -- June, 1992, AFRC Postdoctoral Research Fellow, Cavendish  
Laboratory, University of Cambridge, Cambridge, U.K

July, 1983 -- November, 1986, Engineer, Zhejiang Chemical Industry Research  
Institute, China

### Honors and awards:

Fellow, Royal Society of Chemistry, 2011  
Fellow, American Institute of Medical and Biological Engineering, 2011  
Fellow, The Cambridge International Biographical Association, 2006  
Case Western Reserve University CSE Research Award, 2014  
Zhejiang Science and Technology Award, 2013  
Zhejiang Biomedical Technology Award, 2013  
The National Thousand Talents award, China, 2010  
Outstanding Engineers and Scientists Award, Ohio, 2006  
George Noland Research Award from Sigma Xi, 2006  
The outstanding Overseas Young Chinese Scientist Award, NSF China, 2006  
IUPAC Young Observer Award, 2003  
IBC Award for Achievement, 1995  
The “Best Paper Award” at SAMPE Fall Technical Conference, Cincinnati, 2007  
Japan Society for the Promotion of Science Visiting Fellowship Award, 2010  
Japan Industrial Technology Association Travelling Award, 1999  
Australia-Korea Foundation Travelling Award, 1994  
PhD Scholarship from Australian National University, 1986-1990  
Listed in The Society of Plastics and Engineers’ (USA)  
*Who’s Who in Plastics and Polymers*, p.119, 2000  
Listed in The Cambridge International Biographical Centre’s  
*The International Who’s Who of Intellectuals*, 12th Ed., P.85,1997  
Listed in Marquis *Who’s who in the World*, 1995  
*Who’s who in Science and Engineering*, 3<sup>rd</sup> Ed., 1996  
Listed in the *Australian Polymer Science and Engineering* 1993

### Professional Services:

Member of the Advisory Editorial Board of the *ACS Nano*, 2014-  
Member of the International Advisory Board of *ChemNanoMat*, 2014-  
Member of the Advisory Editorial Board of the *Materials Research Express*, IOP, 2013-  
Member of the Advisory Editorial Board of the *Journal of Physical Chemistry*, ACS, 2012-  
2014  
Editorial Advisory Board of *Chemistry of Graphene* (<http://versita.com/cog/>), 2012-  
Member of the Advisory Editorial Board of *Nano Energy*, Elsevier, 2011-  
Editor-in-Chief of the *Journal of Chemical Engineering and Process Technology*, 2010-  
(<http://www.omicsonline.org/EditorialboardJCEPT.php>)  
Member of the Advisory Editorial Board of the *Chinese Science Bulletin*, CSB, 2012-2014  
Member of the Advisory Editorial Board of the *Journal of Molecular and Engineering  
Materials* (JMEM), World Scientific Publishing, 2011-  
Senior Editor of the *Journal of Molecular Engineering and Systems Biology* (JMESB),  
Herbert Publications Limited, 2011-  
Member of the Editorial Board of the *Journal of Nano Energy and Power Research*,  
2013-  
Honorary Editorial Board of *Reports in Theoretical Chemistry*, 2010-

Member of the Editorial Board of the *International Journal of Polymer Science*, 2008-  
Member of the Editorial Board of *Advances in Physical Chemistry*, 2009-  
Associate Editor of *Research Letters in Physical Chemistry*, 2007-  
Member of the Editorial Review Board of *Scientific Journals International*, 2007-  
Member of the Editorial Board of the *Journal of Nanoscience and Nanotechnology*,  
2001-2005  
Adjunct Professor, Institute of Chemistry, Chinese Academy of Sciences, 1999-  
Joint Professorship from Department of Chemistry, University of Dayton, 2005-2009  
Visiting Professor, Department of Chemistry, Tsinghua University, 2006-2010  
Advisory Professor, East China Normal University, 2006-  
The Guan-Biao honorary Professor, Zhejiang University, 2006-  
Adjunct Professor, Beijing University of Chemical Technology  
Adjunct Professor, Wenzhou Medical College, 2008-  
Adjunct (WCU) Professor, Ulsan National Institute of Science and Technology, South  
Korea 2009-  
Adjunct Professor, Griffith University, Australia, 2010-  
Adjunct Professor, Beijing Institute of Technology, 2010-  
Honorary Professor, Deakin University, Australia, 2012-  
Adjunct Professor, Beijing University of Chemical Technology, 2012-  
Adjunct Professor, Southwestern University, China, 2013-  
Member of the Advisory Council of The International Biographical Centre.  
Member of the Research Advisory Board of The American Biographical Institute.  
American Chemical Society and Division of Physical Chemistry -- Member  
American Association for the Advancement of Science -- International Member  
Royal Australian Chemical Institute -- Chartered Member.  
Advisory Board Member of the Lifeboat Foundation, 2008  
Case School of Engineering, Graduate Curriculum Committee, 2014-  
Case School of Engineering, Ad Hoc Graduate Support Committee, 2014-  
Case School of Engineering, Dean's Research Advisory Committee, 2009 -2011  
Case School of Engineering, Graduate Committee, 2010 - 2011  
Case School of Engineering, Promotion and Tenure Committee, 2011 – 2014  
Case School of Engineering, Cluster Hiring Committee (Energy Subcommittee), 2012-  
Department of Macromolecular Science and Engineering, Award Committee, 2012-  
ORNL CNMS Proposal Review Committee Member  
Frequently invited to attend NSF and The National Academies Review Panels  
Grant proposal reviews for NSF, AFOSR, ONR, ARL, DOE, ACS PRF grant, The  
National Academies (USAID), Kentucky Science and Engineering Foundation, Kansas  
NSF EPSCoR, Australian Research Council (ARC), A'Start (Singapore), Research  
Grants Council of Hong Kong, Canadian Research Council (CRS), Swiss National  
Science Foundation (SNSF), European Science Foundation (ESF), International Center  
for Frontier Research, and IUPAC International Call in the Chemical Sciences.  
As invited Reviewers for more than 40 scientific journals, including *Nature* and  
*Science*.

### Selected significant contributions:

- Dr. Dai's group successfully demonstrated the use of metal-free catalysts in acidic polymer electrolyte membrane fuel cells which is the mainstream fuel cell technology. Dai *et al.* showed that nitrogen-doped carbon nanotubes and their graphene composites catalyze oxygen reduction in these practical fuel cells with both excellent activity and durability. This work offers an inexpensive alternative to metal-based catalysts, which could dramatically reduce the manufacturing cost of fuel cells and open the door for their commercialization (*Science Advances*, published on February 19, 2015).
- Dr. Dai's group developed a low-cost and scalable approach to prepare three-dimensional mesoporous carbon foams. The resultant 3D carbon foams show stable and effective catalytic activities for both ORR and OER as bifunctional air electrodes in primary and rechargeable Zn-air batteries, facilitating commercialization of the Zn-air battery technology (*Nature Nanotechnology*, Accepted).
- Dr. Dai, in collaboration with Drs. Dingshan Yu and Yuan Chen at NTU developed a simple, hydrothermal-assisted self-assembling for scalable production of all carbon hybrid-fibers for flexible solid-state micro-supercapacitors with ultrahigh energy density (*Nature Nanotechnology* **2014**, 9, 555).
- Dr. Dai, in collaboration with Dr. Jong-Beom Baek at UNIST developed a simple, low-cost ball-milling technique for mass production of better graphene sheets than the current, widely-used method of acid oxidation (*PNAS* **2012**, 109, 5588).
- Dr. Dai developed a patent nanotechnology (U.S. Provisional Application No. 61/447,757) to use N-doped carbon nanomaterials to replace platinum as metal-free catalysts for oxygen reduction reaction in fuel cells. Immediately following the publication of the work in the 2009 February 6<sup>th</sup> issue of *Science* (**2009**, 323, 760), numerous commentaries appeared in scientific, business, and popular press, including *Nature Chemistry*, *Chemical Engineering News*, *New Scientist*, *MIT Technology Review*, *Green Car Congress*, *Market Chronicle*, *Energy Industry Today*, *Washington Business Journal*, *U.S. Politics Today*, and *Reuters*. More than 340 refereed papers have cited this work within three years after its publication (see ISI Web of Knowledge<sup>SM</sup>). Furthermore, impact on the fuel cell field and the energy community is continuing, as new references continue to appear and companies (*e.g.*, Carbonano) start to license the technology.
- Dr. Dai developed a patent nanotechnology (US Patent Application Serial No. 11/773,499; filed July 5, 2007) for the development of carbon nanotube-based gecko-foot-mimetic dry adhesives. With a gripping ability nearly ten times better than a real gecko at resisting perpendicular shear forces – the new carbon nanotube dry adhesive could give artificial gecko feet the ability to tightly grip vertical surfaces while being easily lifted off when desired. Immediately following the

publication of the work in the 2008 October 10<sup>th</sup> issue of *Science* (2008, 322, 238), numerous commentaries appeared in scientific, business, and popular press, including *Scientific American*, *New Scientist*, *Nature Nanotechnology*, *MIT Technology Review*, *ScienceDaily*, and *Reuters*. Furthermore, many companies have shown interests in licensing the technology.

- Dr. Dai cleared up the long debate on the conduction mechanism of the so-called *non-conjugated* conducting polymers based on polydiene rubbers (see, for example: *Nature* 1988, 333, 296; *New Scientist* 1988, July 28, 39; *Scientific American* 1988, August 12; *Chemical and Engineering News* 1990, May 7]. The mechanism of electronic conductivity of the *non-conjugated* polydienes could not be explained by accepted theories, which required conjugation for polymers to be conducting. Dr. Dai demonstrated that “I<sub>2</sub>-doping” of polydienes did not generate conductivity by hypervalency and that conjugated sequences were produced by addition and elimination of iodine (*Polymer* 1991, 32, 2120; *Macromolecules* 1994, 27, 6728; *Macromolecules* 1996, 29, 282). Dr. Dai’s work on conducting polydienes has been highly influential and has been adopted by the entire conducting polymer community.
- Dr. Dai initiated innovative research into the synthesis and microfabrication of aligned carbon nanotubes. Before Dr. Dai’s work there were only a limited number of techniques to align carbon nanotubes, either blended in polymeric materials or deposited onto substrate surfaces. In most of those cases, the nanotubes were aligned in the plane *parallel* to the surface. Dr. Dai’s group was the first to demonstrate the large-scale template-free synthesis of aligned carbon nanotubes *perpendicular* to the substrate surface by pyrolysis of iron(II) phthalocyanine (FePc), an organic-metal complex containing both a metal catalyst and a carbon source. Dr. Dai’s pioneering work has been reproduced by many research groups worldwide. Subsequently, Dr. Dai has developed several microlithographic methods for the pattern formation of the *perpendicularly*-aligned multiwalled carbon nanotubes (MWNTs) or single-walled carbon nanotubes (SWNTs) even with other nanocomponent(s) being integrated within the aligned carbon nanotube micropatterns. This work has laid the foundation for integration of carbon nanotubes into multicomponent systems useful for building multifunctional devices with 3-dimensional structures, a significant contribution to potential applications of carbon nanotubes in practical devices. Dr. Dai’s group has also pioneered several simple, but versatile, approaches to functionalize carbon nanotubes for self-assembling them into various multifunctional composite materials/devices for optoelectronic, sensing, catalytic, and even dry adhesive applications. These results have not only attracted a great deal of interest worldwide but have also led to important collaborative relationships with many industrial companies, national labs, and academic institutions. (see, for example: *Mater. Sci. Eng. Rep.* 2010, 70, 63; <http://academic.udayton.edu/limingdai/>).

- Dr. Dai has published a research monograph entitled: “*Intelligent Macromolecules for Smart Device Applications: From Materials Synthesis to Device Applications*” with Springer-Verlag, while his edited book entitled: “*Carbon Nanotechnology: Recent Developments in Chemistry, Physics, Materials Science and Device Applications*” was published by Elsevier. He is regarded as an authority in the field of carbon nanotechnology and functional polymers.
- Dr. Dai and co-workers developed a patent nanotechnology (US 6,623,747, Issued date: September 23, 2003; US 6,923,978, Issued date: August 2, 2005) that had been used as the base technology for the development of new “*Focus night & day*” extended-wear contact lenses marketed by CIBA Vision.

### Books:

**Liming Dai** “*Intelligent Macromolecules for Smart Devices: From Materials Synthesis to Device Applications*”, Springer-Verlag: Berlin, 2004.

**Liming Dai** (Ed.) “*Carbon Nanotechnology: Recent Developments in Chemistry, Physics, Materials Science and Device Applications*”, Elsevier: Amsterdam, 2006.

Wei Lu, Jong-Beom Baek, **Liming Dai** (Eds.) “*Carbon Nanotechnology for Advanced Energy Systems*”, John Wiley & Sons: New York, 2015.

### Journal publications and book chapters:

#### 2015

396. J. Zhang, Z. Zhao, Z. Xia, **L. Dai** “A metal-free bifunctional electrocatalyst for oxygen reduction and oxygen evolution reactions”  
*Nature Nanotechnology* (in press).
395. J. Shui, M. Wang, F. Du, **L. Dai** “N-Doped Carbon Nanomaterials Are Durable Catalysts for Oxygen Reduction Reaction in Acidic Fuel Cells”  
*Science Advances* 2015, 1:e1400129 (Online publication: February 27, 2019).
394. Y. Chen, T. Chen, **L. Dai** “Layer-by-Layer Growth of CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3-x</sub>Cl<sub>x</sub> for Highly Efficient Planar-Heterojunction Perovskite Solar Cells”  
*Adv. Mater.* 2014, 27, 1053.
393. I.-Y. Jeon, M.J. Ju, J. Xu, H.-J. Choi, J.-M. Seo, M.-J. Kim, I. T. Choi, H.M. Kim, J.C. Kim, J.-J. Lee, H. K. Liu, H.K. Kim, S. Dou, **L. Dai**, J.-B. Baek. “Edge-Fluorinated Graphene Nanoplatelets as High Performance Electrodes for Dye-Sensitized Solar Cells and Lithium Ion Batteries”  
*Adv. Funct. Mater.* **2015**, 25, 1170-1179.
392. T. Chen, R. Hao, H. Peng, L. Dai. “High-performance, extremely stretchable, wire-shaped supercapacitors”  
*Angew. Chem. Int. Ed.* (DOI: 10.1002/anie.201409385).

391. Z. Ma, S. Dou, A. Shen, L. Tao, L. Dai, S. Wang. "Sulfur Doped Graphene Derived from Cycled Lithium-Sulfur Batteries as Metal-free Electrocatalyst for Oxygen Reduction Reaction"  
*Angew. Chem. Int. Ed.* (DOI: 10.1002/anie.201410258).
390. J. Xu, M. Wang, N. P. Wickramaratne, M. Jaroniec, S. Dou, **L. Dai**. "High-Performance Sodium Ion Batteries Based on Three-Dimensional Anode from Nitrogen-Doped Graphene Foams"  
*Adv. Mater.* (DOI: 10.1002/adma.201405370)
389. Z. Xiang, D. Cao, **L. Dai**. "Well-Defined Two Dimensional Covalent Organic Polymers: Rational Design, Controlled Syntheses, and Potential Applications"  
*Polym. Chem.* (DOI: 10.1039/C4PY01383B).
388. J. Xu, Y.; J.M. Seo, S. Dou, **L. Dai**, J.-B. Baek  
"Edge-Selectively Halogenated Graphene Nanoplatelets (XGnPs, X = Cl, Br, or I) Prepared by Ball-Milling and Used as Anode Materials for Lithium-Ion Batteries"  
*Adv. Mater.* **2014**, *25*, 1170.
387. Z. Wang, Z. Dai, A. Ji, L. Ren, Q. Xing, **L. Dai**. "Biomechanics of gecko locomotion: the patterns of reaction forces on inverted, vertical and horizontal substrates"  
*Bioinspiration & Biomimetics* (doi: 10.1088/1748-3190/10/1/016019)
386. Z. Xiang, D. Wang, Y. Xue, **L. Dai**, J. Chen. "PAF-derived nitrogen-doped 3D Carbon Materials for Efficient Energy Conversion and Storage"  
*Sci. Rep.* (in press).
385. M. Lin, R. Zou, H. Shi, S. Yu, X. Li, R. Guo, L. Yan, G. Li, **L. Dai**, Y. Liu. "Ocular Biocompatibility Evaluation of Hydroxyl-functionalized Graphene"  
*Mater. Sci. Eng. C.* (doi:10.1016/j.msec.2015.01.086)
384. Y. Xue, J.M. Baek, H. Chen, J. Qu, **L. Dai**. "N-doped graphene nanoribbons as efficient metal-free counter electrode for disulfide/thiolate redox mediated DSSCs"  
*Nanoscale* (DOI: 10.1039/C4NR06969B).
383. R. Cheng, R. Zou, S. Ou, R. Guo, R. Yan, H. Shi, S. Yu, X. Li, Y. Bu, M. Lin, Y. Liu, **L. Dai**. "Graphene oxide complex as pH-Sensitive antitumor drugs"  
*Polym. Chem.* (DOI: 10.1039/C5PY00047E).
382. C. Xue, C.C. Kung, M. Gao, C.C. Liu, **L. Dai**, A. Urbas, Q. Li. "Facile fabrication of 3D layer-by-layer graphene-gold nanorod hybrid architecture for hydrogen peroxide based electrochemical biosensor"  
*Sensing and Bio-sensing Research* **2015**, *3*, 7-11.

## 2014

381. D. Yu, K. Goh, H. Wang, L. Wei, W. Jiang, Q. Zhang, **L. Dai**, Y. Chen  
"Scalable synthesis of hierarchically-structured carbon nanotube-graphene fibres for capacitive energy storage"  
*Nature Nanotechnology* **2014**, *9*, 555.
380. Y. Chen, W.-C. Lin, J. Liu, **L. Dai**  
"Graphene oxide-based carbon interconnecting layer for polymer tandem solar cells"  
*Nano Lett.* **2014**, *26*, 786.
379. A. Shen, Y. Zou, Q. Wang, R. A. W. Dryfe, X. Huang, S. Dou, **L. Dai**, S. Wang

- "Oxygen Reduction Reaction in a Droplet on Graphite: Direct Evidence that the Edge is More Active than the Basal Plane"  
*Angew. Chem. Int. Ed.* **2014**, 53, 10804.
378. N. Wickramaratne, J. Xu, M. Wang, L. Zhu, **L. Dai**, M. Jaroniec  
"Nitrogen enriched porous carbon spheres: Attractive materials for supercapacitor electrodes and CO<sub>2</sub> adsorption"  
*Chem. Mater.* **2014**, 26, 2820.
377. Y. Zhao, C. Hu, L. Song, L. Wang, G. Shi, **L. Dai**, L. Qu  
"Functional Graphene Nanomesh Foam"  
*Energy Environ. Sci.* **2014**, 7, 1913.
376. L. Xiang, P. Yu, J. Hao, M. Zhang, P. Yu, L. Zhu, **L. Dai**, L. Mao  
"Vertically Aligned Carbon Nanotube-Sheathed Carbon Fibers as Pristine Microelectrodes for Selective Monitoring of Ascorbate In Vivo"  
*Anal. Chem.* **2014**, 86, 3909.
375. L. Yan, Y. Gao, R. Pierce, **L. Dai**, J. Kim, M. Zhang  
"Development of Y-shaped Peptide for Constructing Nanoparticle Systems Targeting Tumor-Associated Macrophages In Vitro and In Vivo"  
*Mater. Res. Express* **2014**, 1, 025007.
374. D. W. Chang, H.-J. Choi, I.-Y. Jeon, J.-M. Seo, L. Dai, J.-B. Baek *Carbon* **2014**, 77, 501-507.
373. L. Xiang, P. Yu, Y. Wang, M. Zhang, L. Zhu, **L. Dai**, L. Mao "Platinized Aligned Carbon Nanotube-Sheathed Carbon Fiber Microelectrodes for In -Monitoring Oxygen During Global Cerebral Ischemia/Reperfusion" *Anal. Chem.* **2014**, 86, 5017-5023.
372. C. Xue, M. Gao, Y. Xue, L. Zhu, **L. Dai**, A. Urbas, Q. Li "Building 3D Layer-by-Layer Graphene-Gold Nanoparticle Hybrid Architecture with Tunable Interlayer Distance" *J. Phys. Chem. C* **2014**, 118, 15332-15338.
371. X. Fan, T. Chen, **L. Dai** "Graphene Networks for High-Performance Flexible and Transparent Supercapacitors" *RSC Advances* **2014**, 4, 36996-37002.
370. X.-H. Lu, Y.-Z. Zheng, S.-Q. Bi, Y. Wang, J.-F. Chen, **L. Dai**, X. Tao "Multidimensional ZnO Architecture for Dye-sensitized Solar cells with High-Efficiency up to 7.35%" *Adv. Energy Mater.* **2014**, 4, 1301802.
369. Zhong, Z. Zhang, **L. Dai**, J. Liu, L. Wang "Rationally-Designed Surfactants for Highly-Efficient Graphene Exfoliation: Ionic Groups Attached to Electron-Deficient  $\pi$ -Conjugated Unit through Alkyl Spacers" *ACS Nano* **2014**, 8, 6663-6670.
368. R. Wang, J. Tao, B. Yu, **L. Dai**  
"Characterization of multiwalled carbon nanotube-polymethyl methacrylate composite resins as denture base materials"  
*J. Prosthet. Dent.* 2014, 111, 318-326.
367. T. Chen, **L. Dai**  
"Flexible Supercapacitors Based on Carbon Nanomaterials"  
*J. Mater. Chem.* **2014**, 2, 10756-10775.
366. M.-J. Kim, I.-Y. Jeon, J.-M. Seo, L. Dai, J.-B. Baek  
"Graphene phosphonic acid as an efficient flame retardant"  
*ACS Nano* **2014**, 8, 1039.



365. Z. Xiang, D. Cao, L. Huang, J. Shui, M. Wang, **L. Dai**  
 “Nitrogen-doped holey graphitic carbon from 2D covalent organic polymers for oxygen reduction”  
*Adv. Mater.* **2014**, *26*, 3315.
364. Z. Xiang, Y. Xue, D. Cao, L. Huang, J. Chen, **L. Dai**  
 “Highly-efficient electrocatalysts for oxygen reduction based on 2D covalent organic polymers complexed with non-precious metals”  
*Angew. Chem. Int. Ed.* **2014**, *53*, 2433.
363. J. Liu , G.-H. Kim, Y. Xue , J. Y. Kim, J.-B. Baek, M. Durstock, **L. Dai**  
 “Graphene oxide nanoribbon as hole extraction layer to enhance efficiency and stability of polymer solar cells”  
*Adv. Mater.* **2014**, *26*, 786-790.
362. S. Song, Y. Xue, L. Feng, H. Elbatal, P. Wang, C. Moorefield, G. Newkome, **L. Dai**  
 "Reversible Self-assembly of Terpyridine Functionalized Graphene Oxide for Energy Conversion"  
*Angew. Chem. Int. Ed.* **53**, 1415-1419, 2014.
361. T. Chen, Y. Xue, A. K. Roy, **L. Dai**  
 “Transparent and stretchable high-performance supercapacitors based on wrinkled graphene electrodes”  
*ACS Nano* **8**, 1039-1046, 2014.
360. J. Liu, M. Durstock, **L. Dai**  
 "Graphene oxide derivatives as hole- and electron- extraction layers for high-performance polymer solar cells"  
*Energy & Environmental Science* **2014**, *7*, 1913.
359. T. Chen, H. Peng, M. Durstock, **L. Dai**  
 “High-performance transparent and stretchable all-solid supercapacitors based on highly aligned carbon nanotube sheets”  
*Scientific Report* **2014**, *4*, 3612.
358. C.-C. Kung, P.-Y. Lin, Y. Xue, R. Akolkar, **L. Dai**, X. Yu, C. C. Liu,  
 "Three dimensional graphene foam supported platinum-ruthenium bimetallic nanocatalysts for direct methanol and direct ethanol fuel cell applications"  
*J. Power Sources* **2014**, *256*, 329.
357. Z. Xu, Y. Zhao, **L. Dai**, T. Lin  
 "Multi-responsive Janus liquid marbles: The effect of temperature and acidic/basic vapors"  
*Particle & Particle Systems Characterization* **2014**, *31*, 839.
356. Chen, Zhi; Yu, Dingshan; Xiong, Wei; Liu, Peipei; Liu, Yong; Dai, Liming  
 "Graphene-based nanowire supercapacitors"  
*Langmuir* **2014**, *30*, 3567.
355. M, Yang, H. You, Y. Liang, J. Xu, F. Lu, **L. Dai**, Y. Liu  
 “Morphology controllable and highly luminescent monoclinic LaPO<sub>4</sub>:Eu<sup>3+</sup> microspheres”  
*J. Alloys Comp.* **2014**, *582*, 603-608.
354. Z. Guo, H. Liu, C. Jiang, Y. Zhu, M. Wan, **L. Dai**, L. Jiang ,

"Biomolecule-doped PEDOT with three-dimensional nanostructures as efficient catalyst for oxygen reduction reaction"

*Small* **2014**, *10*, 2087.

353. C.-C. Kung, P.-Y. Lin, Y. Xue, R. Akolkar, **L. Dai**, X. Yu, C. C. Liu  
"Three dimensional graphene foam supported platinum-ruthenium bimetallic nanocatalysts for direct methanol and direct ethanol fuel cell applications"  
*J. Power Sources* 256, 329-335, 2014.
352. C.-C. Kung, P.-Y. Lin, F. J. Buse, Y. Xue, X. Yu, **L. Dai**, C. C. Liu  
"Preparation and characterization of three dimensional graphene foam supported platinum-ruthenium bimetallic nanocatalysts for hydrogen peroxide based electrochemical biosensors"  
*Biosensors and Bioelectronics* 42, 1-7, 2014.
351. J. Niu, M. Li, W. Choi, **L. Dai**, Z. Xia  
"Growth of junctions in 3D carbon nanotube-graphene nanostructures: A quantum mechanical molecular dynamic study"  
*Carbon* 2014, *67*, 627-634.

## 2013

350. **L. Dai**  
"Functionalization of graphene for efficient energy conversion and storage"  
*Acc. Chem. Res.* 2013, *46*, 31-42.
349. I.-Y. Jeon, S. Zhang, L. Zhang, H.-J. Choi, J.-M. Seo, Z. Xia, **L. Dai**, J.-B. Baek.  
"Edge-selectively sulfurized graphene nanoplatelets as efficient metal-free electrocatalysts for oxygen reduction reaction: The electron spin effect"  
*Adv. Mater.* 2013, *25*, 6138-6145.
348. C. Xue, Y. Xue, **L. Dai**, A. Urbas, Q. Li  
"Size and shape dependent fluorescence quenching of gold nanoparticles on perylene dye"  
*Adv. Opt. Mater.* 2013, *6*, 581.
347. W. Yuan, Y. Zhou, Y. Li, C. Li, H. Peng, J. Zhang, Z. Liu, **L. Dai**, G. Shi  
"The edge- and basal-plane-specific electrochemistry of a single-layer graphene sheet"  
*Scientific Reports* 2013, *7*, DOI: 10.1038/srep02248.
346. I.-Y. Jeon, H.-J. Choi, M. J. Ju, I. T. Choi, K. Lim, J. Ko, H. K. Kim, J. C. Kim, J. J. Lee, D. Shin, S.-M. Jung, J.-M. Seo, M.-J. Kim, N. Park, **L. Dai**, J.-B. Baek  
"Direct nitrogen fixation at the edges of graphene nanoplatelets as efficient metal-free electrocatalysts for energy conversion"  
*Scientific Reports* 2013, *3*, DOI: 10.1038/srep02260.
345. X. Wang, L. Jiao, K. Sheng, C. Li, **L. Dai**, G. Shi  
"Solution-processable graphene nanomeshes with controlled pore structures"  
*Scientific Report* 2013, *6*, DOI: 10.1038/srep01996.
344. D. W. Chang, E. K. Lee, E. Y. Park, H. Yu, H.-J. Choi, I.-Y. Jeon, G.-J. Sohn, D. Shin, N. Park, J. H. Oh, **L. Dai**, J.-B. Baek  
"Nitrogen-doped graphene nanoplatelets from simple solution edge-functionalization for n-type field-effect transistors"

- J. Am. Chem. Soc.* 2013, 135 (24), 8981–8988.
343. I.-Y. Jeon, H.-J. Choi, M. Choi, J.-M. Seo, S.-M. Jung, M.-J. Kim, S. Zhang, L. Zhang, Z. Xia, **L. Dai**, N. Park, J.-B. Baek  
“Facile, scalable synthesis of edge-halogenated graphene nanoplatelets as efficient metal-free electrocatalysts for oxygen reduction reaction”  
*Scientific Report* 2013, 3, DOI:10.1038/srep01810.
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15. K.M. Lee, D.W. Chang, F.Y. Yang and **L. Dai**  
“Functionalization of carbon nanotubes with polymers”  
*ACS Polym. Prep.* 2005.
14. L. Qu, P. He, L. Li, M. Gao, G. Wallace and **L. Dai**  
*SPIE Quantum Sensing and Nanophotonic Devices II*, 5732, 84, 2005.
13. **Liming Dai**  
“Part I: From conducting polymers to carbon nanotubes: a revolution of sensors based on architectural diversity of the p-conjugated structure”  
*Energeia* 16(2), 1, 2005.
12. **Liming Dai**  
“Part I: From conducting polymers to carbon nanotubes: a revolution of sensors based on architectural diversity of the p-conjugated structure”  
*Energeia* 16(3), 4, 2005.
11. T. Lin, **L. Dai**, G. Wallace, A. Burrell and D. Officer  
“C<sub>60</sub>-containing conjugated polymers and carbon nanotubes as optoelectronic nanomaterials”  
*ACS Polym. Prep.* 43, 98, 2002.
10. **Liming Dai**  
“Electroluminescent polymers and carbon nanotubes for flat panel displays”  
*SPIE BioMEMS and Smart Nanostructures* 4590, 143, 2001.
9. G.M. Spinks, G.G. Wallace, T.W. Lewis, L. Fifield, **L. Dai**, R.H. Baughman  
“Electrochemically driven actuators from conducting polymers, hydrogels and carbon nanotubes”  
*SPIE Smart materials*, 4234, 223, 2001.
8. **L. Dai**, Q. Chen, X. Gong, S. Huang, B. Winkler, L. Dong, and A. Mau  
“Plasma polymerization and microfabrication of electroactive polymers and carbon nanotubes”  
*SPIE Smart Materials*, 4234, 186, 2001.
7. M. Gao, **L. Dai**, R.H. Baughman, G.M. Spinks and G.G. Wallace  
“Electrochemical properties of aligned nanotube arrays: basis of new electromechanical actuators”  
*SPIE Vol. 3987*, 18, 2000.
6. **Liming Dai**



“Synthesis and surface modification of functional polymers and advanced carbon materials”

*J. Mol. Sci. (Ch.)* 1999, 15(4), 233.

5. **Liming Dai**, Paul Zientek, H.StJohn, P. Pasic, R. Chatelier and Hans Griesser,  
“Ultrathin coatings comprising saccharides and alkylene oxide segments”  
*ACS Polym. Prepr.* 36(1), 82, 1995.
4. Hans J. Griesser, **Liming Dai**, Thomas R. Gengenbach and Ron C. Chatelier  
“The role of entropy in the restructuring of modified polymer surfaces”  
*ACS Polym. Prep.* 38, 1081, 1997.
3. Gerrit J. Beumer, Xiaoyi Gong, **Liming Dai**, Heather A.W. StJohn and Hans J. Griesser  
“Aldehyde plasma polymers”  
*ACS Polym. Prep.* 38, 1037, 1997.
2. Y.Y. Yang, X.Y. Hong, **L. Dai** and A.W. Mau  
“Development-free vapour laser photolithography with 0.4 micron resolution”  
*SPIE Advances in Resist Technology and Processing XII*, 836, 1995.
1. **L. Dai**, T.R.Gengenbach, X. Xie and H.J. Griesser  
“Etching and surface functionalization of perfluorinated polymers and mica in water vapor plasmas”  
*ACS Polym. Prep.* 34(2), 98, 1993.

### Patents and patent applications:

#### CWRU

#### 33. **Liming Dai**

“N-DOPED CARBON NANOMATERIALS AS CATALYSTS FOR OXYGEN REDUCTION REACTION IN ACIDIC FUEL CELLS”

(Provisional Patent Application)

#### 32. **Liming Dai**

“A metal-free bifunctional electrocatalyst for oxygen reduction and oxygen evolution reactions in metal-air batteries”

(Provisional Patent Application)

#### 31. **Liming Dai**

“METAL-FREE OXYGEN REDUCTION ELECTROCATALYSTS”

PCT/US2012/027241 (International Patent Application)

#### 30 Mei Zhang, **Liming Dai**

“Development of Carbon Nanomaterials-Based Nanomedicine For MRI-Guided Thermal Therapy Targeting Tumor Associated Macrophages”  
Invention disclosure (CWRU 2014-2511)

## University of Dayton

### 29. **Liming Dai**

“Carbon nanotube arrays with better performance for oxygen reduction than platinum”  
*Patent Application* (US20100183950).

### 28. Qingjiang Sun and **Liming Dai**

“Bilayer-bulk-heterojunction solar cells based on a liquid crystalline polymer”  
*Patent Application.*

### 27. **Liming Dai** and Liangti Qu

“Supergrowth of ultra-long perpendicularly-aligned carbon nanotubes”  
*Patent Application.*

### 26. Liangti Qu and **Liming Dai**

“Preferential syntheses of semiconducting vertically-aligned single-walled carbon nanotubes for direct use in FETs”  
*Patent Application.*

### 25. **Liming Dai** and Richard Vaia

“Asymmetrically charged carbon nanotubes by controlled functionalization”  
*US 7,488,508.*

### 24. **Liming Dai** and Ajit K. Roy

“Vertically-aligned carbon nanotubes infiltrated with temperature-responsive polymers: Smart nanocomposite films for self-cleaning and controlled release”  
*Patent Application.*

### 23. Liangti Qu, Morley Stone and **Liming Dai**

“Aligned carbon nanotubes for dry adhesives and method for producing same”  
*Patent Application* (US Patent Application Serial No. 11/773,499; filed July 5, 2007).

### 22. Chen Wei, **Liming Dai** and Ron Xu

“Plasma modified carbon nanotubes as re-enforcement fillers in rubber/carbon nanotube composites”  
*Patent Application.*

### 21. Chen Wei, **Liming Dai**, Ajit Roy and Tia Benson Tolle

“Polymer-carbon nanotube composites for use as sensors”  
*US Patent Application No. 11/518,832; Filed: Sept. 11, 2006.*  
*PCT/US2006/035512; International Filing Date: Dec. 12, 09, 2006;*  
*International Publication No. WO/2007/033189.*

### 20. Liangti Qu and **Liming Dai**

“Substrate-enhanced electroless deposition of metal nanoparticles on carbon nanotubes”  
*US 7,538,062, Issued on May 26, 2009; International Filing Date: Dec. 12, 09, 2006;*  
*International Publication No. WO/2007/033188.*

### 19. **Liming Dai** and Kyung Lee

“Asymmetric end-functionalization of carbon nanotubes”  
PCT Patent Application PCT/US2006/005531

US Provisional Application 60/653,382; filed: Feb.16, 2005 (to be issued).

18. **Liming Dai** and Wei Chen  
“Transparent conducting coatings containing nanotubes and transparencies incorporating the same” *Patent Application*.
17. **Liming Dai**, Wei Chen and Renhe Lin  
“Coatings containing nanotubes, methods of applying the same and substrates incorporating the same”  
*Patent Application* (with Sceriacin) *US/23.03.04/USP 555658*.
16. Toshi Ohasi and **Liming Dai**  
“Touch and auditory sensors based on nanotube arrays”  
*PCT Patent Application; US Provisional Application 60/811,942; filed: June 8, 2006; US Patent Application Serial No. 11/759,626; filed: July 7, 2007.*

### **University of Akron**

15. **Liming Dai**, Charles Moorefield and George Newkome  
“Organic photovoltaic cells by self-assembling light-harvesting metallodendrimers on aligned carbon nanotubes”,  
US Patent Application (in process).
14. **Liming Dai** and Ajeeta Patil  
“Plasma modification of carbon nanotubes and their applications”  
*Patent Application*.
13. **Liming Dai** and Vardhan Bajpai  
“Synthesis of large-scale perpendicularly aligned helical carbon nanotubes”  
*Patent Application*.
12. **Liming Dai** and Junbing Yang  
“The preparation of multicomponent interposed carbon nanotube patterns and their applications”  
*Patent Application*.
11. **Liming Dai** and Sinan Li  
“Hyperbranched polymers for enhancing dyeing effects”  
*Patent Application*
10. **Liming Dai** and Ajeeta Patil  
“Polymer-coated carbon nanotube field emitters”  
*Patent Application*.

### **CSIRO**

9. R. Chatelier, **Liming Dai**, Hans J. Griesser, Li Sheng, Paul Zientek, Dieter Lohmann and Peter Chabreck  
“Multilayer Materials”  
US 6,623,747 (Issued date: September 23, 2003).
8. R. Chatelier, **Liming Dai**, Hans J. Griesser, Li Sheng, Paul Zientek, Dieter Lohmann

- and Peter Chabreck  
 “Multilayer Materials”  
 US 6,923,978 (Issued date: August 2, 2005).
7. Limin Dong, **Liming Dai** and Albert W.H. Mau  
 “Organic salt-containing light emitting polymer devices:  
 high efficiency with a reverse bias” *PCT Int. Patent Application*.
  6. **Liming Dai** and Shaoming Huang  
 “Multilayer carbon nanotube films and method of making the same”  
 U.S. 6,808,746 (Issued date: October 26, 2004)  
 International Patent Application (*WO 00/63115; PCT/AU00/00324*).  
 Malaysia Patent: *PI20001621*
  5. Albert Mau, **Liming Dai**, Shaoming Huang, Yongyung Yang and Huizhu He  
 “Patterned carbon nanotube films”  
 US 6,811,957 B1 (Issued date: November 2, 2004).
  4. S. Huang, **L. Dai** and A.W.H. Mau  
 “Substrate-supported aligned carbon nanotube films”  
 International Patent Application (*WO 00/73204; PCT/AU00/00550*).
  3. A. Mau, **L. Dai** and S. Huang  
 “Process for making aligned carbon nanotubes ”,  
 US 6,866,801 (Issued date: March 15, 2005).
  2. S. Huang, **L. Dai** and A.W.H. Mau  
 “Patterned carbon nanotubes”  
 International Patent Application (*WO 01/21863; PCT/AU00/01180*)  
 Australian Patent Application (*PQ3041/99*).  
 Malaysia and Taiwan: *Applications filed; Awaiting official no.*
  1. **L. Dai**, S. Huang, O. Johansen, A. Mau, E. Hammal, and X. Tang  
 “Process and apparatus for the production of carbon nanotubes ”,  
 US20040149209 (Issued date: August 5, 2004).

### International Recognitions:

- 2015 Plenary talk at the International Workshop on Graphene and C<sub>3</sub>N<sub>4</sub>-based Photocatalysts (IWGCP) to be held in Wuhan, China, June 5-8, 2015  
 Invited talk in the 250th ACS meeting (ENFL Division), Boston, Aug. 16-20, 2015,  
 Keynote talk at the Second International Conference on Electrochemical Energy Science and Technology (EEST2015), Vancouver, August 16<sup>th</sup> to 22<sup>nd</sup>, 2015  
 Invited talk at the NSTI Nanotech Conference, DC, June 14-17, 2015  
 Plenary talk at the 2nd China-USA symposium, Shanghai, June 27-28, 2015  
 Keynote talk at The 14<sup>th</sup> Pacific Polymer Conference, Kauai, Hawaii, Dec. 9-13, 2015  
 Co-Organizers for Symposium Energy: Graphene and Carbon Nanocomposites at The 14<sup>th</sup> Pacific Polymer Conference, Kauai, Hawaii on Dec. 9-13, 2015  
 Co-Organizers for the Advanced Materials and Nanotechnology Symposium at the Sino-US Chemical Engineering Conference, Shanghai, October 13-16, 2015

Co-Organizers for Symposium: “Nano Carbon Materials: From 1D to 3D” for the Fall 2015 MRS, Boston, November 29 to December 4, 2015

2014 Plenary lecture at the First International Conference on Polymer Science and Engineering (PSE-2014), Beijing, China, November 10-13, 2014

Invited talk at the Nanoenergy Nanosystems 2014 (NENS 2014), Beijing, China, Dec. 8-10, 2014

Invited talk at the 2014 MRS Spring Meeting, San Francisco, April 21-25, 2014

Invited talk at the 248th ACS National Meeting, San Francisco, August 10-14, 2014

Invited talk at the 247th ACS National Meeting, Dallas, March 16-20, 2014

Invited talk at the 225th meeting of The Electrochemical Society Orlando, May 12-15

Invited talk at Asia Pacific Conference on Electrochemical Energy Storage and Conversion, Brisbane, February 5-8, 2014

2013 Invited talk at the 7th Sino-US Conference of Chemical Engineering, Beijing, October 14-18, 2013

Invited talk at the 246th ACS National Meeting, Indianapolis, Sept. 8-12, 2013

Invited keynote lecture at the 4<sup>th</sup> International Conference of Bionic

Engineering (ICBE'13), Nanjing, August 13-16, 2013

Invited talk at the 245th ACS National Meeting, New Orleans, April 7-11, 2013

Invited talk at the 2013 International Photonics and OptoElectronics Meetings (POEM 2013), Wuhan, May 25-26, 2013

Invited talk at the 11<sup>th</sup> NANO KOREA, Seoul, July 10-12, 2013

Invited talk at the MACROFRONTIERS 2013, Cleveland, June 6-8, 2013

2012 Plenary talk at the OZ Carbon 2012 conference, Adelaide, July 1-3, 2012.

Invited talk at the Gordon Conference on the Chemistry and Physics of Graphitic Carbon Materials, Davidson College, NC, June 17-22, 2012.

Keynote talk at the 9th Annual Conference on FOUNDATIONS OF NANOSCIENCE: SELF-ASSEMBLED ARCHITECTURES AND DEVICES (FNANO12), Snowbird, Utah, April 16 –19, 2012.

Invited talk at the 244<sup>th</sup> ACS National Meeting, Philadelphia, Pennsylvania, August 19-23, 2012.

Invited talk at the IUPAC World Polymer Congress, Blacksburg, Virginia, June 24-29, 2012.

Invited talk at the 2012 US-Korea Joint Symposium of Nanotechnology, Dallas, Texas, May 1-4, 2012.

2011 Plenary talk at the International Conference on Nanoprint 2011, in Singapore, July 4-5, 2011.

Co-Chair for “Nanomaterials and Nanotechnology in Fuels and Energy Production” at 241<sup>st</sup> ACS National Meeting & Exposition, Anaheim, California, March 27-31, 2011.

The 8th Annual Taiwan/U.S. Air Force Nanoscience Workshop, Seattle, Washington, April 5-6, 2011.

Invited talk at the US-Korea Joint Symposium of Nanotechnology (US-Korea JSNT) Gyeongju, Korea, June 1-3, 2011.

Joint ONR-AFOSR Photovoltaic Review, DC, June 28-30, 2011.

Invited talk at the National Meeting of The Federation of Analytical Chemistry and Spectroscopy, Reno, NV, October 2 - 6, 2011.

Invited talk at the Third UNIST International Symposium on Electrochemistry, Ulsan, Korea, December 1-3, 2011.

Invited talk at the International Conference on One-dimensional Nanomaterials 2011 (ICON 2011), Beijing, China, December 7-9, 2011.

2010 Keynote talk at the NT10 - the 11th International Conference on the Science & Applications of Nanotubes 2010, Montréal, Canada, June 27 – July 2, 2010.

Invited talk at the IEEE International NanoElectronics Conference, Hongkong, January 3-8, 2010.

Invited talk at the SPIE Nanobiosystems: Processing, Characterization, and Applications III, San Diego, CA, August 1-5, 2010.

Invited talk at the 42<sup>nd</sup> ACS Central Regional Meeting, “Chemistry: Reacting to Provide New Technology,” Dayton, OH, June 16-19, 2010.

Invited talk at the Telluride workshop on Interfacial Phenomena in NanoStructured Materials and Devices, Telluride, CO, February 8-11, 2010.

Invited talk at the International Workshop on Nanomaterials for Alternative Energy Applications, Vancouver, Canada, June 20-23, 2010.

Invited talk at the 12th International Ceramics Congress & 5th Forum on New Materials, Montecatini Terme, Italy, June 6-18, 2010.

Invited talk at the 2nd International Conference on Cellular and Molecular Bioengineering, Singapore, August 2-4, 2010.

Invited talk at the 2<sup>nd</sup> International Symposium on Molecular Nanotechnology, Nara, Japan, December 1-2, 2010.

Co-Organizers for Symposium C: “Fundamentals of Low-Dimensional Carbon Nanomaterials”, at the 2010 Fall Meeting of the Materials Research Society, Boston, November 29 – December 3, 2010.

2009 Invited talk at the American Chemical Society 237th National Meeting, Salt Lake City, March 22-26, 2009.

Invited talk at the 2009 Guadalupe Workshop, San Antonio, April 17-21, 2009.

Invited talk at the 2009 Ohio Innovation Summit, Dayton, April 20-23, 2009.

Invited talk at the 17th International Conference on Composite Materials, Edinburgh, July 27-31, 2009.

Invited talk at the ACS 238th National Meeting, DC, August 16-20, 2009.

Invited talk at the 2009 American Composite Society Annual Meeting, Delaware, September 15-17, 2009.

Invited talk at the International Green Energy Nanocarbon Conference, Chonju, South Korea, November 4-7, 2009.

Invited talk at the 2009 AIChE Annual Meeting, Nashville, November 9-14, 2009.

Invited talk at the AFRL Nanotechnology Materials and Devices Workshop, Cincinnati, June, 2009.

Talk at the Joint Navy Air Force Organic/Hybrid Solar Cell Research Program Review, National Harbor, MD, May, 2008.

Invitation talk at The 6th Annual USAF-Taiwan Nanoscience Workshop, San Francisco, April, 2009

Invited talk at the Ohio Innovation Summit, Dayton, April, 2009.

2008 Invited talk at the 2008 SPIE Optics and Photonics: Nanoscience and Engineering, San Diego, August, 2008.

Invited talk at The 2nd International Conference on Advanced Nano Materials (ANM 2008), Aveiro, Portugal, June, 2008.

Invited talk at the 2008 International Symposium on Materials for Enabling Nanodevices (ISMEN2008), National Cheng Kung University, Tainan, Taiwan, September, 2008.

Invited talk at The 2<sup>nd</sup> Chinese Symposium on Applied Chemistry, Chinese Academy of Sciences, ChungChang, China, September, 2008.

2008 Polymer Chemistry and Polymer Composite Contractor's Meeting, AFOSR, Maryland, May, 2008.

The 2008 NSF Nanoscale Science and Engineering Grantees Conference, NSF, DC, December, 2008.

2007 Plenary talk at the SPIE *Optics and Photonics*, San Diego, August, 2007.

Invited talk at the American Chemical Society Meeting, Boston, August, 2007.

Invited talk at the 4<sup>th</sup> International Conference on Materials for Advanced Technology, Singapore, July, 2007.

Invited talk at the ANTEC 2007, Cincinnati, May, 2007.

Invited talk at the 172<sup>nd</sup> Rubber Division Meeting, Cleveland, October, 2007.

Invited talk at the 2007 AIChE Annual Meeting, Salt Lake City, November, 2007.

Invited talk at the 8<sup>th</sup> World Congress on Nanocomposites 2007, Las Vegas, September, 2007.

Conference organizing member for SAMPE, Cincinnati, September/October, 2007.

Invited international committee member for the 3<sup>rd</sup> International Conference on Smart Materials, Structures and Systems, Italy, June, 2008.

Invited international committee member for IUMRS International Conference on Electronic Materials, Sydney, July/August, 2008.

Invited to be the Associated Editor of the international journal: *Research Letters in Physical Chemistry*.

Invited to be Member of the Editorial Review Board of the Scientific Journals International, 2007.

NanoWerk Spotlight on our paper entitled: "Are Diamond Nanoparticles Cytotoxic?" (*J. Phys. Chem. B* 111, 2, 2007).

<http://www.nanowerk.com/spotlight/spotid=1216.php>

ACS' weekly news (Dec. 20 2006, Article #4) on our work on nanodiamond cytotoxicity

<http://acswebapplications.acs.org/applications/ccs/application/index.cfm?pressreleaseid=2748&categoryid=33>

Our nanodiamond paper (*J. Phys. Chem. B* 111, 2, 2007) was among one of the three [Most-Accessed Articles in J. Phys. Chem. B during Jan.-Mar. and April-June, 2007.](#)

Our work on the aligned SWNT growth was featured as a cover page in *J. Mater. Chem.*(Vol.17 (32), 2007).

2006 An edited book on “*Carbon Nanotechnology: Recent Developments in Chemistry, Physics, Materials Science and Device Applications*”, (L. Dai, Ed.), was published by Elsevier: Amsterdam, 2006 (ISBN 04445185-X).

George Noland Research Award from Sigma Xi, 2006, Dayton Chapter

2006 Outstanding Engineers and Scientists Award, Affiliate Societies Council of Dayton

Invited talk at The 4<sup>th</sup> International Conference on Materials Processing for Properties and Performance (MP3), November 28 - December 4 Tsukuba, Japan.

Invited talk at the American Chemical Society meeting, San Francisco, September, 2006.

Invited talk and International Advisory Committee Member for the International conference on Nanocarbon and Nanodiamond 2006, St. Petersburg, Russia, September, 2006.

Invited talk at 2006 International conference on Nanoscience and Nanotechnology (ICONN06), Brisbane, Australia, July, 2006.

Invited talk at the seventh International conference on the Science and Application of Nanotubes (NT06), Nagano, Japan, June, 2006.

Chair and plenary talk at the Nanosymposium at the Ohio Academy of Science annual meeting on April 22, 2006.

Invited talk at The International Conference of Synthetic Metals (ICSM), Dublin, July, 2006.

Invited talk at the NanoMaterials for Defense Applications Symposium, Virginia, May, 2006.

[NanoWerk](#) Spotlight on our paper entitled: “Carbon microfibers sheathed with aligned carbon nanotubes: Towards multidimensional, multicomponent, and multifunctional nanomaterials” (*Small* 2(8-9), 1052, 2006)

<http://www.nanowerk.com/spotlight/spotid=735.php>

2005 Invited talk at the American Chemical Society meeting, San Diego, March 13-17, 2005.

Plenary Lecture at The First Ohio Nanotechnology Summit, Dayton, March 1-2, 2005.

Invited talk at Photonic West, San Jose, January 22-27, 2005.

Invited talk at MRS Spring Meeting, San Francisco, March 28-April 1, 2005.

Invited talk at Nanoporous Materials IV (NANO-IV), Niagara Falls, Canada, June 8-11, 2005.

Invited talk at The First International Nanocarbon Workshop, Hayama, Japan, July 30-31, 2005.

Invited talk at The Santa Fe Workshop on Nano Engineered Materials and Macro Molecular technologies, Santa Fe, New Mexico on October 2 – 7, 2005.



Highlight for our paper entitled: "Asymmetric end-functionalization of multiwalled carbon nanotubes" (*J. Am. Chem. Soc.* 127, 4122, 2005) in *small* **2005**, 1, 1148-1150

Royal Society of Chemistry, Chemistry World News on our paper entitled: "Substrate-enhanced electroless deposition of metal nanoparticles on carbon nanotubes" (*J. Am. Chem. Soc.* 127, 10806, 2005)

<http://chemistry.rsc.org/chemistryworld/news/2005/july/27070501.asp>

Our work on the plasma patterning was featured as a cover page in *Plasma Processes and Polymers* (Vol.2 (4), 2005).

2004 A monograph entitled: "*Intelligent Macromolecules for Smart Devices: from Materials Synthesis to Device Applications*" (ISBN: 1-85233-510-6) was published by Springer-Verlag. Invitation to be one of the main authors for a Nanoscience and Nanotechnology textbook by Kluwer Academic Publishers.

Invited Speaker for the *Macromolecular Science and Engineering Colloquia* in Case Western Reserve University

Invited talk at The Advanced Multifunctional Nanocarbon Materials and Nanosystems 2004, E-MRS SPRING MEETING 2004, France May 2004

Invited talk at The International Conference on Synthetic Metals, Wollongong, July, 2004

Member of the Organizing Committee and a Session Chair for the 20th (International) Polymer Processing Society's meeting, Akron, June, 2004

2003 IUPAC Young Observer Award

Invited talk at The XVIIth International Winterschool on Electronic Properties of Novel Materials: Euroconference on Molecular Nanostructures, Kirchberg, Austria, March, 2003.

Invited talk at the American Chemical Society's Rubber Division meeting, Cleveland, Oct. 2003.

Our work on lithographic micro-/nano-fabrication of aligned carbon nanotubes was featured as a cover page in *Nanotechnology* (Vol.14, October, 2003)

2002 Invited to be the co-Chairman for American Physics Society Meeting on Nanotechnology for Display, Austin, TX, March, 2003.

Invited talk and session chair at the SPIE Conference on Smart Structures and Materials, San Diego, CA, March 2-6, 2003.

Invited talk at the International Conference on Advances in Petrochemicals and Polymers in the New Millennium, Bangkok, July 22-25, 2003.

Invited talk at the 2002 Chinese Conference on Nanotechnology, Hsinchu, Taiwan, Dec. 11-13, 2002.

Invited talk and session chair at the American Vacuum Society's 49<sup>th</sup> International Symposium, Denver, CO, Nov. 4-8, 2002.

Invited talk at the American Chemistry Society's 223<sup>rd</sup> National Meeting, FL, April 7-11, 2002.

Invited Review articles for *ChemPhysChem* and *Australian Journal of Chemistry – The International Journal of Chemical Science*.

Invited to be the Regional Receiving Editor for *Australian Journal of Chemistry – The International Journal of Chemical Science*.

- 2001 Invited to be on the Editorial Board of the international *Journal of Nanoscience and Nanotechnology*.  
Invited to be on the International Committee for the SPIE Symposium on Microelectronics <http://spie.org/conferences/calls/01/au/conf/AU01.html>  
Invited talk and session chair at the American Carbon Society meeting “Carbon 2001”, Kentucky, July 14-19, 2001.  
Invited to present a Plenary Lecture at IUPC Workshop on Advanced Materials (WAM II, Organized by Prof. C.N.R. Rao <http://www.jncasr.ac.in/wam>), Bangalore, February 13-16, 2002.  
Invited Review article for *Journal of Nanoparticle Research* (145, 4, **2002**).
- 2000 Invited Review articles for *Advanced Materials* (899, 13, **2001**; 915, 13, **2001**) and *Encyclopedia of Nanoscience and Nanotechnology*.  
Our work on lithographic micro-/nano-fabrication of aligned carbon nanotubes was featured twice as cover pages in *The Journal of Physical Chemistry B* (1891, 104, **2000**; 2193, 104, **2000**), once in *The Journal of Nanoscience and Nanotechnology* (43, 1, **2001**), once in *Australian Science* (Vol. 22, June, 2001), and reported in *New Scientist* (31 July 1999, p.64), *Scientific of American* (June 2000, p. 42, US Edition), *The Australian newspaper* (22 June 1999, p.33), *Ecos* (p.8, July-September, 2001), etc.  
Invited talks for *Mitsubishi International Fullerenes Workshop (Organized by Prof. Eiji Osawa), Tokyo, 2001* and *International Conference on Material for Advanced Technologies, Singapore, 2001*.
- 1999 Invited Feature Article for *The Journal of Physical Chemistry B* (1891-1915, 104, **2000**) and review article for *Polymers for Advanced Technologies* (357-420, 10, **1999**).  
Plenary talk at *The 18<sup>th</sup> fullerene general symposium, Okazaki, Japan, 1999*.  
Awarded with *Japan Industrial Technology Association Traveling Fellowship*.
- 1998 Invited Review article for the *Journal of Macromolecular Science; Reviews in Macromolecular Chemistry and Physics* (273-387, 39, **1999**).  
Plenary talk at *The 8th International Symposium on Fine Chemistry and Functional Polymers (FCFP-VIII), Taiyuan, China 1998*.
- 1997 Invited review article for the ACS book entitled: “*Semiconductive Polymers*”.  
Invited talk at *The 37th International Symposium on Macromolecules, Australia*  
Elected as a Fellow of the *International Biographical Association, Cambridge*.
- 1996 Invited chapter for a book entitled: “*Polymers and Organic Solids*” Science Press, China.  
Invited talk at *International Conference on Science and Technology of Synthetic Metals, Salt Lake City, USA, 1996*.  
Invited talk at *The 1996 Gordorn Conference on Electronic Processes in Organic Materials, New Hampshire, USA, 1996*.
- 1995 Awarded with *The International Biographical Center Award for Achievement*.
- 1994 Awarded with *Australia-Korea Foundation Travelling Fellowship*.

- 1993 Developed a patent technology; the base technology for the new “*Focus night & day*” extended-wear contact lenses marketed by CIBA Vision.
- 1992 Cleared up the long debate on the conduction mechanism of the so-called *non-conjugated* conducting polymers based on polydiene rubbers (For details see: *Macromolecules* 661, 21, *ibid.* 6728, 27, **1994**; *ibid.* 282, 29, **1996**; **1988**; *Nature* 296, 333, **1988**; *New. Sci.* 39, July 28, **1988**; *C&E News* 53, May 7, **1990**; *Sci. Am.* August 12, **1988**; *Polymer* 2120, 32, **1991**).