

CURRICULUM VITAE

PERSONAL DATA

Name: Dr. Chatchawal Wongchoosuk

Address: Modern Nanotechnology Group,
Department of Physics, Faculty of Science,
Kasetsart University, Phahon Yothin
Road, Bangkok 10900, Thailand.

Current Position: Lecturer at Department of Physics,
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Date of Birth: September 30, 1983

Nationality: Thai

Marital Status: Single



EDUCATION

2007-2011 Ph.D. in Physics (International Program), Mahidol University.

September 2009 – May 2010, Visiting Scholar: Laboratory for Nanotechnology at the Institute of Microsystem Engineering (IMTEK), Albert Ludwigs University Freiburg, Germany.

June 2010 - September 2010, Visiting Scholar: Quantum Chemistry Group, Institute for Advanced Research and Department of Chemistry, Graduate School of Science, Nagoya University, Nagoya, Japan

2005-2007 M.Sc. in Physics (International Program), Mahidol University.

2001-2005 B.Sc. in Physics (First Class Honors), Prince of Songkla University.

FUNDING

2012-present Preproposal Research Fund (PRF) from Faculty of Science, Kasetsart University

SCHOLARSHIPS

2007-2011 Ph.D. scholarship under the program “Strategic Frontier Research Network” from the Commission on Higher Education, Thailand.

2007 Institutional Strengthening Program from Faculty of Science, Mahidol University, Thailand.

2005-2007 Teaching Assistantship from Department of Physics, Mahidol University, Thailand.

REFEREED JOURNAL PUBLICATIONS

1. **C. Wongchoosuk**, P. Jangtawee, S. Lokavee, S. Udomrat, P. Sudkeaw, T. Kerdcharoen, Novel Flexible NH₃ Gas Sensor Prepared By Ink-Jet Printing Technique, *Advanced Materials Research* **2012**, Vol.506, pp. 39-42.

2. **C. Wongchoosuk**, K. Subannajui, A. Menzel, I. Amarilio-Burshtein, S. Tamir, Y. Lifshitz, and M. Zacharias, Controlled synthesis of ZnO nanostructures: The role of source and substrate temperatures, *Journal of Physical Chemistry C* **2011**, Vol.115, pp. 757-761.

3. **C. Wongchoosuk**, A. Wisitsoraat, D. Phokharatkul, A. Tuantranont, and T. Kerdcharoen, Tungsten Oxide Thin Film doped with Multi-walled Carbon Nanotubes for Hydrogen Gas Sensor, *Sensors* **2010**, Vol. 10, pp. 7705-7715.

4. **C. Wongchoosuk**, A. Wisitsoraat, A. Tuantranont and T. Kerdcharoen, “Portable Electronic Nose Based on Carbon Nanotube-SnO₂ Gas Sensors: Feature Extraction Techniques and Its Application for Detection of Methanol Contamination in Whiskeys”, *Sensors and Actuators B: Chemical* **2010**, Vol. 147, pp. 392-399.

5. **C. Wongchoosuk**, M. Lutz and T. Kerdcharoen, “Detection and classification of human body odor using an electronic nose”, *Sensors* **2009**, Vol. 9, pp. 7234-7249.
6. **C. Wongchoosuk**, A. Udomvech and T. Kerdcharoen, “The geometrical and electronic structures of open-end fully functionalized single-walled carbon nanotubes”, *Current Applied Physics* **2009**, Vol. 9, pp. 352-358.
7. **C. Wongchoosuk**, S. Choopun, A. Tuantranont and T. Kerdcharoen, “Au-doped Zinc Oxide Nanostructure Sensors for Detection and Discrimination of Volatile Organic Compounds”, *Materials Research Innovation* **2009**, Vol. 13, pp. 185-188.
8. **C. Wongchoosuk**, S. Kongsuk and T. Kerdcharoen, “Theoretical investigations on the tip-functionalized carbon nanotubes interacting with water”, *International Journal of Nanoparticles* **2008**, Vol. 1, pp. 136-151.

PATENTS

1. Thai Patent Pending No. 0901001349: “Artificial Olfactory Device for people identification”
2. Thai Patent Pending No. 1001001840: “Briefcase Electronic Nose”

BOOK CHAPTER

C. Wongchoosuk, P. Lorwongtragool, and T. Kerdcharoen, “Malodor Detection Based on Electronic Nose”, Chapter 3 in Air Quality Monitoring, Assessment and Management, ed. Nicolas Mazzeo, June, 2011, ISBN 978-953-307-317-0

INTERNATIONAL CONFERENCE PROCEEDINGS

1. **C. Wongchoosuk**, P. Jangtawee, S. Lokavee, S. Kladsomboon, S. Udomrat, P. Sudkeaw, T. Kerdcharoen, Novel Flexible NH₃ Gas Sensor Prepared By Ink-Jet Printing Technique, Chiang Mai International Conference on Biomaterials & Applications (CMICBA2011), 9 – 10 August 2011, The Empress Hotel, Chiang Mai, Thailand. (Invited Paper)

2. C. Khunarak, M. Lutz, P. Lorwongtragool, **C. Wongchoosuk**, S. Kladsomboon, T. Seesaard, T. Kerdcharoen, Indoor Air Quality Monitoring Using Networked Electronic-Nose For Better Quality of Life, Chiang Mai International Conference on Biomaterials & Applications (CMICBA2011), 9 – 10 August 2011, The Empress Hotel, Chiang Mai, Thailand.
3. **C. Wongchoosuk**, M. Lutz, T. Puntheeranurak, T. Youngrod, H. Phetmung, T. Kerdcharoen, Identification of People from Armpit Odor Region using Networked Electronic Nose, Defence, Science & Research Conference (DSR 2011), 3-5 August 2011, Suntec Convention & Exhibition Centre, Singapore. ([IEEE Explore & Scopus Databases](#)).
4. **C. Wongchoosuk**, A. Wisitsoraat, A. Tuantranont, T. Kerdcharoen, Nanostructured Gas Sensors by Electron Beam Evaporation, Proceedings of the 2011 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference (ECTI-2011), 17-19 May 2011, Pullman Raja Orchid, Khon Kaen, Thailand. ([IEEE Explore & Scopus Databases](#))
5. P. Lorwongtragool, **C. Wongchoosuk**, T. Kerdcharoen, Portable Electronic Nose for Beverage Quality Assessment, Proceedings of the 2011 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference (ECTI-2011), 17-19 May 2011, Pullman Raja Orchid, Khon Kaen, Thailand. ([IEEE Explore & Scopus Databases](#))
6. A. Menzel, K. Subannajui, **C. Wongchoosuk**, and M. Zacharias, “Getting new insights into the growth of ZnO nanowires by simulation and shape diagram”, E-MRS 2011 Spring Meeting, 9-13 May, 2011, Congress Center, Nice, France.
7. **C. Wongchoosuk** and T. Kerdcharoen, Development of portable electronic nose and applications for monitoring armpit odor, The 3rd Biomedical Engineering International Conference (BMEICON 2010), 27-28 August 2010, Kyoto University, Kyoto, Japan.

8. A. Menzel , J. Ruhhammer, **C. Wongchoosuk**, K. Subannajui and M. Zacharias, ZnO nanowires for optical, electronic and sensor applications, IMTEK Postersession 2010, 24 June 2010, Building/Gebäude 101, University of Freiburg, Freiburg, Germany,
9. P. Lorwongtragool, **C. Wongchoosuk**, T. Kerdcharoen, Portable Artificial Nose System for Assessing Air Quality in Swine Buildings, Proceedings of the 2010 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference (*ECTI-2009*), 19-21 May 2009, The Empress Hotel Convention Centre, Chiang Mai, Thailand. ([IEEE Explore & Scopus Databases](#))
10. C. Karuwan, A. Wisitsoraat, D. Phokharatkul, T. Pogfai, **C. Wongchoosuk**, T. Kerdcharoen, A. Tuantranont, “Electronic Tongue: Plasma Functionalized Carbon Nanotube Electrochemical Sensor Array on PDMS/Glass Chip”, IEEE International Symposium on Biomedical Engineering (IEEE ISBME 2009) , 14-18 December 2009, A Royal Méridien Hotel, Bangkok, Thailand. ([IEEE Explore Database](#))
11. **C. Wongchoosuk**, A. Wisitsoraat, A. Tuantranont and T. Kerdcharoen, “Mobile Electronic Nose Based on Carbon Nanotube-SnO₂ Gas Sensors: Feature Extraction Techniques and Its Application”, Proceedings of the 2009 Electrical Engineering /Electronics, Computer, Telecommunications, and Information Technology International Conference (*ECTI-2009*), 6-9 May 2009, Ambassador City Jomtien Pattaya, Pattaya, Thailand. ([IEEE Explore & Scopus Databases](#))
12. S. Lokavee, **C. Wongchoosuk** and T. Kerdcharoen, “Sidewall Functionalized Carbon Nanotubes: A Theoretical Study on the Effects of Carboxylic Group” Pure and Applied Chemistry International Conference (*PACCON 2009*), January 14-16, 2009, Amarin Lagoon Hotel, Phitsanulok, Thailand.
13. **C. Wongchoosuk**, M. Lutz, A. Tuantranont and T. Kerdcharoen, “James Bond Electronic Nose for Estimation of Thai Tea Aroma” International Conference on Tea Production and Tea Products, November 26-28, 2008, Mae Fah Luang University, Chiang Rai, Thailand.

14. **C. Wongchoosuk**, T. Techalertmanee, S. Sahasithiwat, A. Tuantranont and T. Kerdcharoen, “Discrimination of Thai alcoholic beverages using carbon black-polymer composite sensor array”, The 4th International Conference on Technological Advances of Thin Films & Surface Coatings (*ThinFilms 2008*), July 13-16, 2008, Singapore.
15. **C. Wongchoosuk**, S. Choopun, A. Tuantranont and T. Kerdcharoen, “Au-doped zinc oxide nanostructure sensors for detection and discrimination of volatile organic compounds”, The 2nd International Conference on Functional Materials and Devices (*ICFMD 2008*), June 16-19, 2008, Kuala Lumpur, Malaysia.
16. **C. Wongchoosuk**, M. Lutz and T. Kerdcharoen, “Correction of humidity effect for detection of human body odor”, Proceedings of the 2008 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference (*ECTI-2008*), May 14-17, 2008, Phuket, Thailand. ([IEEE Explore & Scopus Databases](#))
17. **C. Wongchoosuk**, M. Lutz, A. Tuantranont and T. Kerdcharoen, “Development of the Hardware and Software for Human Body Odor Discrimination”, The 5th International Joint Conference on Computer Science and Software Engineering (*JCSSE-2008*), May 7-9, 2008, Kanchanaburi, Thailand.
18. **C. Wongchoosuk**, S. Choopun, A. Tuantranont and T. Kerdcharoen, “Portable electronic nose based on Au-doped ZnO nanostructure sensors for classification of Thai alcohols”, First International Workshop on Nanotechnology and Application (*IWNA 2007*), November 15-17, 2007, Vung Tau, Vietnam.
19. **C. Wongchoosuk**, S. Kongsuk and T. Kerdcharoen, “First principles and MD simulation study of the interaction of functionalized carbon nanotubes with water molecules”, Proceeding of the 7th IEEE International Conference on Nanotechnology (*IEEE-NANO 2007*), August 2-5, 2007, Hong Kong Convention & Exhibition Centre, Hong Kong, China. ([IEEE Explore & Scopus Databases](#))

20. **C. Wongchoosuk**, S. Kongsuk and T. Kerdcharoen, “Computational molecular modeling and simulation of functionalized carbon nanotubes”, Proceedings of the 2007 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference (*ECTI-2007*), May 9-12. 2007, Mae Fah Luang University, Chiang Rai, Thailand.

21. **C. Wongchoosuk**, A. Udomvech and T. Kerdcharoen, “Open-ended functionalized single-walled carbon nanotubes: a quantum mechanics study of the effects of tubule length and functional groups”, the 1st International Conference on Applied Science (*ICAS-2006*), Nov, 5-7 2006, Vientiane, Laos.

NATIONAL CONFERENCE PROCEEDINGS

1. **C. Wongchoosuk**, D. Phokharatkul, A. Wisitsoraat, A. Tuantranont and T. Kerdcharoen, “Synthesis of Vertically Aligned Open-end Carbon Nanotubes Using CVD with Water Etching Technique”, Siam Physics Congress 2009, March 19-21, 2009, Cha-am Methavalai Hotel, Phetchburi, Thailand.

2. W. Donkrajang, S. kladsomboon, **C. Wongchoosuk** and T. Kerdcharoen, “Study of Interactions between Metalloporphyrins with Various Volatile Substances Using Computational Quantum Mechanics and Molecular Dynamics simulations”, 13th Annual National Symposium for Computational Science and Engineering (*ANSCSE-2009*), March 25-27, 2009, Kasetsart University, Bangkok, Thailand.

3. P. Lorwongtragool, **C. Wongchoosuk**, A. Udomvech and T. Kerdcharoen, “Computational studies on the dynamics and trajectories of Li⁺ intercalated into single-walled carbon nanotube”, 13th Annual National Symposium for Computational Science and Engineering (*ANSCSE-2009*), March 25-27, 2009, Kasetsart University, Bangkok, Thailand.

4. **C. Wongchoosuk**, S. Choopun, A. Tuantranont and T. Kerdcharoen, “Application of a portable electronic nose based on Au-doped ZnO nanostructure sensors for alcohols discrimination”, The 2nd Progress in Advance Materials; Micro/Nano

Materials and Applications (*PAM-2008*), January 16-18, 2008, Kosa Hotel, Khon Kaen, Thailand.

5. **C. Wongchoosuk**, M. Lutz, A. Tuantranont and T. Kerdcharoen, "Possibility of electronic nose for health-care monitoring", Proceedings of The 1st Symposium on Thai Biomedical Engineering (*ThaiBME-2007*), December 18-19, 2007, Rangsit University, Thailand.

6. **C. Wongchoosuk**, M. Lutz, A. Tuantranont and T. Kerdcharoen, "Human body odor monitoring using artificial olfaction devices", German-Thai Symposium on Nanoscience and Nanotechnology (*GTSNN-2007*), September 27-28, 2007, Chonburi, Thailand.

7. T. Thaneerananon, **C. Wongchoosuk** and T. Kerdchareon, "Modeling molecular structures and interactions of porphyrazine (Pz) with various alcohols sensing", Proceeding of the 33rd Congress on Science and Technology of Thailand (*STT-33*), October 18-20, 2007, Walailak University, Nakhon Si Thammarat, Thailand.

8. N. Sreesarakham, **C. Wongchoosuk** and T. Kerdcharoen, "Application of an electronic nose for classification of Thai-instant coffees", Proceeding of the 33rd Congress on Science and Technology of Thailand (*STT-33*), October 18-20, 2007, Walailak University, Nakhon Si Thammarat, Thailand.

9. S. Traipop, **C. Wongchoosuk**, M. Lutz and T. Kerdcharoen, "The classification of Thai herbs using artificial olfaction device", Proceeding of the 33rd Congress on Science and Technology of Thailand (*STT-33*), October 18-20, 2007, Walailak University, Nakhon Si Thammarat, Thailand.

10. R. Ngenhlor, **C. Wongchoosuk** and T. Kerdcharoen, "Design of artificial olfaction devices for replacing human nose", The 1st Thailand National Nanotechnology Conference on Nanomaterials, Pharmaceutical, Devices and Application (*NanoThai-2007*), August 14-16, 2007, Chiang Mai, Thailand.

11. **C. Wongchoosuk** and T. Kerdcharoen, "Adsorption of volatile organic compounds onto carbon nanotubes and graphene sheet as studied by density functional theory", The 1st Thailand National Nanotechnology Conference on Nanomaterials, Pharmaceutical, Devices and Application (*NanoThai-2007*), August 14-16, 2007, Chiang Mai, Thailand.
12. **C. Wongchoosuk**, S. Krongsuk, P. Singjai and T. Kerdcharoen, "Molecular dynamics simulations of functionalized carbon nanotube in water", 11th Annual National Symposium for Computational Science and Engineering (*ANSCSE-2007*), March 28-30, 2007, Prince of Songkla University, Phuket campus, Thailand.
13. **C. Wongchoosuk**, S. Unai, K. Katanyukunanon and T. Kerdcharoen, "Demonstration apparatus of atomic force microscope for nanoscience study" 32nd Congress on Science and Technology of Thailand (*STT-32*), October 10-12, 2006, Bangkok, Thailand.
14. **C. Wongchoosuk**, A. Udomvech and T. Kerdcharoen, "The geometry and electronic structure of the finite-Sized functionalized single-walled carbon nanotubes", 10th Annual National Symposium for Computational Science and Engineering (*ANSCSE-2006*), March 22-24, 2006, Chiang Mai University, Thailand.
15. **C. Wongchoosuk**, A. Udomvech and T. Kerdcharoen, "The electronic structure of functionalized single-walled carbon nanotubes", 31st Congress on Science and Technology of Thailand (*STT-31*), October 18-20, 2005, Suranaree University of Technology, Nakhon Ratchasima, Thailand.

AWARDS & HONORS

- | | |
|-------------|---|
| 2012 | Awards for Graduates with Distinctions (DEAN'S LIST) from Faculty of Graduate Studies, Mahidol University |
| 2010 | Faculty of Science's Students with Talent and Achievement in Research of Physics Department (SC STAR of Physics 2010) |
| 2010 | Japan-East Asia Network of Exchange for students and Youth (JENESYS) Fellowship, Japan Society for the Promotion of |

- Science (JSPS), Research at Nagoya University for 3 months with Prof. Stephan Irle.
- 2008** Outstanding Research Award of the Thailand Research Fund (TRF), “Electronic Nose for Agriculture and Food”.
- 2008** The 2nd Winner Poster Award in Devices & Others Session, The 2nd Progress in Advance Materials; Micro/Nano Materials and Applications (PAM-2008), Khon Kaen, Thailand.
- 2007** The Best Poster Award in Material Applications and Industrials Session, The 1st Thailand National Nanotechnology Conference on Nanomaterials, Pharmaceutical, Devices and Application (NanoThai-2007), Chiang Mai, Thailand.
- 2005** First Class Honors and Outstanding Student Award, Science, PSU, Songkhla Thailand.

RESEARCH SKILLS

Programming and Computer Software: LabVIEW, Visual C++, MPLAB (Microcontroller), Visual Basic, Mathematica, Materials Studio, UNIX, Linux, Gromacs, Gaussian, GAMESS, HyperChem, DFTB+

Equipment and Technique: Photolithography, Nanosphere Lithography, Chemical Vapor Deposition (CVD) system, Metal Evaporator, Spin Coater, DC & RF Sputtering system, Scanning Electron Microscope (SEM), Energy-dispersive X-ray spectroscopy (EDX), E-beam evaporation, Test Gas system, Electronic Nose system

RESEARCH INTERESTS & EXPERIENCES

- Quantum calculations and molecular dynamic simulation for the nanoscale systems, i.e. Density functional theory (DFT), Semiempirical methods, Density Functional based Tight Binding (DFTB), MD simulation, DFTB/MD, MM, etc.
- Synthesis of patterned nanomaterials, i.e. ZnO nanostructures, Carbon nanotube, SiC nanotube, Graphene etc.
- Fabrication of molecular devices, i.e. Hybrid gas sensors, FET, LED, Printed electronics.

- Electronic Nose, i.e. Desktop E-Nose, Portable E-nose and Networked E-nose.
- Intelligent Systems, i.e. Smart Farm, Smart Cars, and Smart Home.

MEDIA

I have appeared on television to give interviews on my research:

- TV Channel 3, Thailand.(December 18, 2008)
“เกาะประเด็นร้อน เกาะประเด็นลึก ตอน จมูกอิเล็กทรอนิกส์” ย้อนหลัง Link>>
<http://www.youtube.com/watch?v=W5lLmEw2OP4> Part1
<http://www.youtube.com/watch?v=iT9YvGd4r0A> Part2
- TV Channel ModernineTV, Thailand.(April 16, 2007)
“รายการ ชีพจรโลกกับ สุทธิชัย หยุ่น ตอนนาโนเทคโนโลยี” ย้อนหลัง Link>>
<http://www.youtube.com/watch?v=B-4O7XFmmyg>

Newspaper:

- Science-Manager Online (1 November 2010)
“ขึ้นเทพ! แยกกลิ่นผู้ก่อการร้ายด้วย “จมูกอิเล็กทรอนิกส์” Link>>
<http://www.manager.co.th/Science/ViewNews.aspx?NewsID=9530000153734>
- Science-Manager Online (9 June 2009)
“เนคเทคดันเทคโนโลยีผู้ “สมาร์ทฟาร์ม” นำร่องที่ทุ่งกุลาร้องไห้” Link>>
<http://www.manager.co.th/Science/ViewNews.aspx?NewsID=9520000064418>
- ข่าวสด หน้า 29 (15 January 2009)
“จมูกอิเล็กทรอนิกส์ เพื่อการเกษตรและอาหาร”

ACTIVITIES

2012-present	KU-Staff 36, President
2009-2010	Thai Student Club in Freiburg, Germany, Web Administrator
2006-2007	University Business Incubators (MUA), Staff member
2002-2005	Physics Club (PSU), President
2004-2005	Science Sport Club (PSU), Vice-president
2002-2004	Mobile Physics Education Project (PSU), President

- 2003-2004** Science Student Council (PSU), Vice-president
- 2003-2004** Freshmen Welcoming Committee (PSU), Vice-president
- 2003** Volunteer Project (PSU), Staff member