

Curriculum Vitae: Anurak Udomvech

NAME: Anurak Udomvech

BIRTHDATE/PLACE: January 9, 1976. Phuket Province, Thailand.

SEX: Male

NATIONALITY: Thai

PLACE OF WORK &
PRESENT ADDRESS: Department of Physics
Faculty of Science, Thaksin University
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EDUCATION:

Jun 2003 - Apr 2008 Ph.D. (Physics), Mahidol University, Thailand

Dissertation: "Architecture, Energetic, and Electronic Properties of Carbon Nanotubes for Electronic Applications"
Supervisor: Asst. Prof. Teerakiat Kerdcharoen, Ph.D.

Jun 1998 - Mar 2003 M.Sc. (Physics), Mahidol University, Thailand

Thesis: "The Geometry and Electronic Structure of Nanotubes and their Application as Charge Storage and Transport Devices"
Supervisor: Asst. Prof. Teerakiat Kerdcharoen, Ph.D.

Jun 1994 – Mar 1998 B.Sc. (Physics), Thaksin University

Jun 1991 – Mar 1994 High School level at Phuket Wittayalai School, Phuket, Thailand.

EXPERIENCE:

- Special Lecturer at Rajamangala University of Technology (Salaya)
- Teaching Assistant at Department of Physics, Mahidol University
- Lecturer at Thaksin University (2008 - present)

RESEARCH EXPERIENCE AND WORK SHOP ACTIVITIES:




- March 9-21, 2003 The 1st Thai Summer School of Computational Chemistry (1st-TS₂C₂), Department of Chemistry, Faculty of Science, Khon Kaen University, Thailand
- May 24-28, 2004 The 2nd Thai Summer School of Computational Chemistry (2nd-TS₂C₂), "Computational Chemistry Method," Department of Chemistry, Faculty of Science, Chulalongkorn University, and Department of Chemistry & Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- November 21, 2005 Technical Workshop: Developing MPI Parallel Program with Visual Studio 2005, Faculty of Engineering, Kasetsart University, Thailand
- April 2-5, 2006 The 3rd Thai Summer School of Computational Chemistry (3rd-TS₂C₂), "COLUMBUS in BANGKOK A Multireference Methods Workshop," Burapha University, Bang Saen, Thailand
- April 2-7, 2007 The 4th Thai Summer School of Computational Chemistry (4th-TS₂C₂), "Computational Simulation Techniques," Department of Chemistry, Faculty of Science, Ubon Ratchathani University, Thailand

SCHOLARSHIPS:

RESEARCH INTEREST:

Computational Material Sciences: Molecular Quantum Mechanic Calculations, DFT & Ab-initio Calculations, Molecular Modeling, Cluster Computations on Nanostructure Materials.
Molecular Modeling Design: on Carbon Nanotubes and its Derivative to Applications which include Molecular Storage & Molecular Electronic devices, Field Emission Properties, and Functionalizations, Conformational Analysis of Organic Electronic, Magnetic Nanomaterials. Also interests on Precision Agriculture, Climate Change and Global Warming, and Biomimetic materials and Architectures.

INTERNATIONAL PUBLICATIONS:

-  A. Udomvech and T. Kerdcharoen, "*Electronic Structure of Straight and T-Shape Singled-Wall Carbon Nanotube Junctions: A Molecular Quantum Mechanics Study*," **Advanced Materials Research**. Vols. 55-57 (2008) pp 565-568 (Link: <http://www.scientific.net/0-87849-356-5/565/>)
-  C. Wongchoosuk, A. Udomvech and T. Kerdcharoen, "*The geometrical and electronic structures of open-end fully functionalized single-walled carbon nanotubes*," **Current Applied Physics**, *In press*. (doi:[10.1016/j.cap.2008.03.003](https://doi.org/10.1016/j.cap.2008.03.003))
-  A. Udomvech and T. Kerdcharoen, "*Theoretical Investigation of Lithium-Atom Insertion into Ultra-Small Diameter Carbon Nanotubes*," **Journal of the Korean Physical Society**, Vol. 52, No. 5, May 2008, pp. 1350-1354.

- Md. Shafiqzaman, A. Udomvech and T. Kerdcharoen, "Theoretical Studies of Pentagon-Heptagon Pair Defects in Carbon Nanotube Junctions," **7th IEEE Conference on Nanotechnology, 2007. (IEEE-NANO 2007)**, 2-5 Aug. 2007, 545-548. (DOI: 10.1109/NANO.2007.4601250)
- A. Udomvech, T. Kerdcharoen and T. Osotchan, "First Principle Study of Li and Li⁺ Adsorbed on Carbon Nanotube: Variation of Tubule Diameter and Length," **Chemical Physics Letters**, 406 (2005) 161. ([doi:10.1016/j.cplett.2005.02.084](https://doi.org/10.1016/j.cplett.2005.02.084))
- A. Udomvech, T. Kerdcharoen, V. Parasuk, Y. Tantirungrotechai and T. Osotchan, "Electronic Structure of the Finite-Sized Single Walled Carbon Nanotube," **International Journal of Nanoscience**, 2 (2003) 141. (DOI: [10.1142/S0219581X03001176](https://doi.org/10.1142/S0219581X03001176))

INTERNATIONAL CONFERENCES:

- A. Udomvech and T. Kerdcharoen, "Electronic Structure of Straight and T-Shape Singled-Wall Carbon Nanotube Junctions: A Molecular Quantum Mechanics Study," *International Conference on Smart Materials-Smart/Intelligent Materials and Nano Technology & 2nd International Workshop on Functional Materials and Nanomaterials (SmartMat-'08 & IWOFM-2)*, 22-25 April 2008, Chiang Mai, THAILAND (**Poster**)
- Md. Shafiqzaman, A. Udomvech and T. Kerdcharoen, "Theoretical Studies of Pentagon-Heptagon Pair Defects in Carbon Nanotube Junctions", *Proceeding of the 7th IEEE International Conference on Nanotechnology (IEEE-NANO 2007)*, 2-5 August 2007, Hong Kong Convention & Exhibition Centre, Hong Kong, China. (IEEE Explore Database) (**Oral Presentation**)
- A. Udomvech, Teerakiat Kerdcharoen, "Adsorption of Li₂ on 4Å Single Walled Nanotubes as Studied by Density Functional Theory", *Proceeding of the International Conference on Nanoscience and Nanotechnology (ChinaNANO 2007)*, 4-6 June 2007, Beijing, China. (**Poster**)
- Md. Shafiqzaman, A. Udomvech and T. Kerdcharoen, "The Electronic and Energetic Properties of Linearly Fused Single-walled Carbon Nanotubes by Pentagon-Heptagon Pair Defects", *Proceedings of the 2007 Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology International Conference*, 9-12 May 2007, Mae Fah Luang University, Chiang Rai, Thailand. (**Oral Presentation**)
- A. Udomvech, T. Osotchan, T. Kerdcharoen, "THEORETICAL INVESTIGATION OF LITHIUM ATOMS INSERTION INTO THE ULTRA-SMALL DIAMETER CARBON NANOTUBES", *The 1st International Workshop on Functional Materials and The 3rd International Workshop on Nanophysics and Nanotechnology 2006*, 6-9 December 2006, Saigon-Halong Hotel, Halong City, Vietnam. (**Oral Presentation**)
- C. Wongchoosuk, A. Udomvech, T. Kerdcharoen, "Open-ended Functionalized Single-Walled Carbon Nanotubes: a Quantum Mechanics Study of the Effects of Tubule Length and Functional Groups", *1st International Conference on Applied Science*, 5-7 November 2006, Vientiane, Laos, Laos Journal on Applied Science 1 (2006) 75. (**Oral Presentation**)
- A. Udomvech, T. Osotchan, and T. Kerdcharoen, "First Principle Study of Li/Li⁺ and Li Clusters Doped Single-Walled Carbon Nanotubes", *2nd Asian Pacific Conference on*

Theoretical & Computational Chemistry, 2-6 May 2005, Chulalongkorn University. **(Poster)**

- A. Udomvech, T. Osotchan, U. Robkob, V. Parasuk, and, T. Kerdcharoen, "Computational Modeling of Finite-Sized Pure and Alkali-Metal Intercalated Carbon Nanotubes", *The International Conference on Smart Materials*, 1-3 December 2004, Imperial Mae Ping, Chiang Mai, Thailand. **(Oral Presentation)**

NATIONAL CONFERENCES:

2008:

- Anucha Pratumma, A. Udomvech and T. Kerdcharoen, "Energetic Properties and Work function of K, K⁺, Cs and Cs⁺ Intercalated Carbon Nanotubes: Applications to Field-Emission," *The 12th Annual Symposium on Computational Science and Engineering (ANSCSE 12)*, 27-29 March 2008, Ubon Rajathanee University, Thailand. **(Oral Presentation)**
- A. Udomvech and T. Kerdcharoen, "Computational investigation of carbon nanotubes as molecular building block for nanoscale devices," *The 2nd Progress in Advanced Materials: Micro/Nano Materails and Applications*, 16-18 January 2008, Kosa Hotel, Khon Kaen, Thailand. **(Poster)**

2007:

- Wirote Kruapoo, Anurak Udomvech, Somboon Sahasithiwat and Teerakiat Kerdcharoen, "COMPARISON OF THE ENERGY BAND GAP BETWEEN REGIORANDOM AND REGIOREGULAR ARRANGEMENTS OF POLY(3-OCTYLTHIOPHENE-2,5-DIYL) USING COMPUTATIONAL MOLECULAR QUANTUM MECHANICS," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**
- Anucha Pratumma, Anurak Udomvech, Teerakiat Kerdcharoen, "ENERGETIC PROPERTIES AND WORK FUNCTION OF K AND K⁺ INTERCALATED CARBON NANOTUBES: APPLICATIONS TO FIELD-EMISSION," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**
- Piangkhwon Wanitchang, Anurak Udomvech, Somboon Sahasithiwat and Teerakiat Kerdcharoen, "On the geometrical and electronic properties of regioregular substituted polythiophene," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**
- Sawanya Janput, Chanchana Thanachayanont, Rackchart Traiphon, Anurak Udomvech, Teerakiat Kerdcharoen, "STUDY OF THE π - π INTERACTIONS BETWEEN BENZENE AND SOLVENTS USING COMPUTATIONAL QUANTUM MECHANICS," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**
- Orapan Waipan, Anurak Udomvech and Teerakiat Kerdcharoen, " CARBON NANOTUBE T-JUNCTION ARCHITECTURE," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**

- Jittra Sonpong, Anurak Udomvech, and Teerakiat Kerdcharoen, "MOLECULAR ARCHITECTURES OF (n,n)/(n,0) CARBON NANOTUBE JUNCTION: AM1 STUDY," *The 33rd Congress on Science and Technology of Thailand*, 18-20 October 2007, Walailak University, Nakhon Si Thammarat, Thailand. **(Poster)**
- Md.Shafiqzaman, A. Udomvech, S. Pratontep and T. Kerdcharoen, "Semi-empirical study on linearly fusing two carbon nanotubes", *11th Annual National Symposium for Computational Science and Engineering*, 28-30 March 2007, Prince of Songkla University, Phuket Campus. **(Oral Presentation)**

2006:

- Md. Shafiqzaman, A Udomvech, S. Pratontep, and T. Kerdcharoen, "Molecular Design Architecture of Carbon Nanotubes Junctions: AM1 Study". *32nd Congress on Science and Technology of Thailand*, 10-12 October 2006, Queen Sirikit National Convention Center, Bangkok. **(Poster)**
- S. Uttiya, A. Udomvech, S. Pratontep, S. Vatanayon, T. Kerdcharoen, "Interaction between Alcohol and Zinc Phthalocyanine: Computational Modeling and Spectroscopy", *10th Annual National Symposium for Computational Science and Engineering*, 22-24 March 2006, Chiang Mai University. **(Oral Presentation)**
- K. Kasemsuwan, A. Udomvech, R. Traiphol, C. Thanachayanont, T. Kerdcharoen, "Solvation Induced Dynamics of Local pi-pi Interaction of Phenyl Ring Rotation of MEH-PPV Conjugated Polymer Solution", *10th Annual National Symposium for Computational Science and Engineering*, 22-24 March 2006, Chiang Mai University. **(Oral Presentation)**
- R. Jaroen, A. Udomvech, T. Kerdcharoen, "Electronic Structure Calculations of K and K+ Inserted into Single-Walled Carbon Nanotubes", *10th Annual National Symposium for Computational Science and Engineering*, 22-24 March 2006, Chiang Mai University. **(Oral Presentation)**
- 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*, 22-24 March 2006, Chiang Mai University. **(Oral Presentation)**
- A. Udomvech, T. Osotchan, T. Kerdcharoen, "Energetic and Structural Properties of Li-intercalated Ultra-Small Diameter Single-Walled Carbon Nanotubes", *10th Annual National Symposium for Computational Science and Engineering*, 22-24 March 2006, Chiang Mai University. **(Oral Presentation)**

2005:

- C. Wongchoosuk, A. Udomvech, T. Kerdcharoen, "The Electronic Structure of Functionalized Single-Walled Carbon Nanotubes", *31st Congress on Science and Technology of Thailand*, 18-20 October 2005, Suranaree University of Technology, Nakhon Ratchasima. **(Poster)**
- T. Maturros, P. Srisongkam, S. Maneetoon, A. Udomvech, T. Kerdcharoen, "Conformation and Electronic Structure Relate Emission Spectra for Polyfluorene and Anthracene Copolymer", *31st Congress on Science and Technology of Thailand*, 18-20 October 2005, Suranaree University of Technology, Nakhon Ratchasima. **(Poster)**
- A. Udomvech, and T. Kerdcharoen, "First Principle Study of Lithium Atoms Insertion into Ultra-small Diameter Carbon Nanotubes", *31th Congress on Science and*

Technology of Thailand, 18-20 October 2005, at Technopolis, Suranaree University of Technology, Nakhon Ratchasima. **(Poster)**

- A. Udomvech and T. Kerdcharoen, "Theoretical Study of Lithium Atoms Insertion into Smallest Diameter Carbon Nanotubes", *9th Annual National Symposium for Computational Science and Engineering*, 23-25 March 2005, Mahidol University. **(Oral Presentation)**

2004:

- A. Udomvech, T. Osotchan, and T. Kerdcharoen, "Theoretical Investigation of Li⁺/Li and Li Clusters Insertion into Single-Walled Carbon Nanotubes", *30th Congress on Science and Technology of Thailand*, 19-21 October 2004, Impact Exhibition and Convention Center, Bangkok. **(Poster)**
- A. Udomvech, T. N. Truong and T. Kerdcharoen, "Theoretical Investigation of Lithium Atoms Insertion into Single-Walled Carbon Nanotubes", *8th Annual National Symposium for Computational Science and Engineering*, 21-23 July 2004, Suranaree University of Technology. **(Oral Presentation)**

2003:

- A. Udomvech, T. N. Truong and T. Kerdcharoen, "Adsorption of Metal Atom on Tubule Diameter of Carbon Nanotube: the Computational Study", *29th Congress on Science and Technology of Thailand*, 20-22 October 2003, Khon Kaen University. **(Poster)**
- A. Udomvech, T. Kerdcharoen and T. N. Truong, "A DFT Study of Li Adsorbed on Carbon Nanotubes: Variation of Tubule Diameter and Length", *7th Annual National Symposium for Computational Science and Engineering*, 24-25 March 2003, Chulalongkorn University. **(Oral Presentation)**

2002:

- A. Udomvech, T. Kerdcharoen and T. N. Truong, "Computational Modeling of Carbon Nanotube-Based Alkali-Metal Storage", *6th Annual National Symposium for Computational Science and Engineering*, 3-5 April 2002, Walailak University. **(Oral Presentation)**

2001:

- A. Udomvech, V. Parasuk, Y. Tantirungrotechai and T. Kerdcharoen, "The Geometry and Electronic Structure of Carbon Nanotubes and Their Application as Charge Storage and Transport Devices", *27th Congress on Science and Technology of Thailand*, 16-18 October 2001, Hat Yai, Songkla. **(Poster)**
- A. Udomvech, T. Kerdcharoen, V. Parasuk and Y. Tantirungrotechai, "The Geometry and Electronic Structure of Nanotubes and Their Application as Charge Storage and Transport Devices", *5th Annual National Symposium for Computational Science and Engineering*, 19-20 June 2001, NECTEC. **(Oral Presentation)**