

# Puangrat Kajitvichyanukul

Department of Civil Engineering, Naresuan University  
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## EDUCATION

B. Eng. Industrial Engineering, Chiang Mai University, Thailand 1986-1990  
M.Eng. Environmental Engineering, Chulalongkorn University, Thailand 1992-1994  
Ph.D. Civil & Environmental Engineering, University of Texas at Arlington, USA 1998-2002

## EMPLOYMENT

### **Center of Excellence on Environmental Research and Innovation Faculty of Engineering, Naresuan University**

- *Director* 2011- present
- *Associate Professor* 2009 - present

### **King Mongkut's University of Technology Thonburi, Thailand**

Responsible for research, teaching, and service

- *Associate Professor* 2006-2009
- *Assistant Professor* 2003-2006
- *Lecturer* 1996-2003

### **Team Consulting Engineering and Management, Co. Ltd.**

Responsible for design, planning, and project coordinator

1992-1996

## FIELD OF INTEREST

Hazardous Waste and Wastewater Treatment Technology: Pesticides, Heavy metals, Industrial Intermediates

Environmental Nanotechnology and Nanosafety

Photochemistry: Homogeneous and Heterogeneous Photocatalysis, Fenton and photo-Fenton process

## PROFESSIONAL ACTIVITIES

### **Scholarly activities**

*Editorial Advisory Board*, *Encyclopedia of Environmental Management*, Taylor & Francis Group, 2009 – present

*Handling Editor*, *International Journal of Environmental and Waste Management* (IJEWM), Inderscience Publishers, Switzerland, 2007- present

*Handling Editor*, *International Journal of Environmental Engineering* (IJE), Inderscience Publishers, Switzerland, 2008-present

*Guest Editor*, *Water*, Special Issue on "Science and Technology of Wastewater and Sludge Treatment", MDPI Publishing, Basel, Switzerland, 2010-2011

*International Project Reviewer*, Ontario Research Fund-Research Excellence (ORF-RE) program, Ministry of Research and Innovation, Canada, 2010 - 2011

*Guest Editor*, *International Journal of Environmental and Waste Management* (IJEWM), Inderscience Publishers, Switzerland, 2006 and 2009

*Associate Editor*, *Handbook of Environment and Waste Management*, World Scientific Publishing Co., Singapore, 2006

## Academic Services

*Committee*, Nanotechnology Association of Thailand, 2012

*Sub-Committee*, Nanosafety and Ethic National Strategic Plan, 2011

*Academic Committee*, National Research Center for Environmental and Hazardous Waste Management, Thailand, 2002-2006

*Research Committee*, National Research Center for Environmental and Hazardous Waste Management, Thailand, 2002- 2006

*Activity Committee*, Environmental Engineering Association of Thailand, 2001 – 2003

*Environmental Specialist and Technical Committee*, Thai Environmental and Community Development Association (*Magiceyes*), 2001-2005

## PUBLICATIONS

### Books

- 1) **P. Kajitvichyanukul**, Environmental Nanotechnology, Naresuan University Publisher, 2014
- 2) **P. Kajitvichyanukul**, J. Ananpattarachai, A. Watcharenwong, S. Sinyoung, Nanosafety Guideline for Research and Education Activities, supported by Thailand Research Fund, 2012
- 3) **P. Kajitvichyanukul**, J. Anotai, Water Supply and Sanitary Engineering, 2<sup>nd</sup> edition, Reankaew Publishing, Bangkok, 2002
- 4) **P. Kajitvichyanukul**, J. Anotai, Water Supply and Sanitary Engineering, 1<sup>st</sup> edition, Reankaew Publishing, Bangkok, 2000



### A Chapter in Book

- 1) **P. Kajitvichyanukul**, L. K. Wang, Y.-T. Hung, Oil Water Separation, Advanced Physicochemical Treatment Processes, Handbook of Environmental Engineering Volume 4, Editor-in-Chief: L. K. Wang, 2006, 521-548
- 2) **P. Kajitvichyanukul**, J. Ananpattarachai, Y.-T. Hung, Chemical Feeding Systems, Advanced Physicochemical Treatment Processes, Handbook of Environmental Engineering Volume 5, Editor-in-Chief: L. K. Wang, 2007, 543-557
- 3) **P. Kajitvichyanukul**, J. Ananpattarachai, O.S. Amuda, O.S. Alade, Y.-T. Hung, L.K. Wang, Landfilling Engineering and Management, Biosolid Engineering and Management, Handbook of Environmental Engineering Volume 7, Editor-in-Chief, L.K. Wang, 2008, 415-442
- 4) **P. Kajitvichyanukul**, N. K. Shammass, Y.-T. Hung, L. K. Wang, J. Ananpattarachai, Potable Water Biotechnology, Membrane Filtration and Biofiltration, Membrane and Desalination Technologies, Handbook of Environmental Engineering Volume 13, Editor-in-Chief: L. K. Wang, 2008, 477-523
- 5) **P. Kajitvichyanukul**, Y.-T. Hung, L. K. Wang, Membrane Technologies for POU and POE Applications, Membrane Filtration and Biofiltration, Membrane and Desalination Technologies, Handbook of Environmental Engineering Volume 13, Editor-in-Chief: L. K. Wang, 2008, 603-638
- 6) **P. Kajitvichyanukul**, Y.-T. Hung, L. K. Wang, Membrane Technologies for Oil-Water Separation, Membrane Filtration and Biofiltration, Membrane and Desalination Technologies, Handbook of Environmental Engineering Volume 13, Editor-in-Chief: L. K. Wang, 2008, 639-668

- 7) Y.-T. Hung, **P. Kajitvichyanukul**, L. K. Wang, Advances in anaerobic systems for organic pollution removal from food processing wastewater, Handbook of Water and Energy Management in Food Processing, Editor-in-chief: J Klemes, R Smith and J-K Kim, Woodhead Publishing Limited, Cambridge, England, 2008, 755-775
- 8) **P. Kajitvichyanukul**, Y.-T. Hung, Municipal Solid Waste Recovery and Recycle, Solid Waste Engineering and Management, Handbook of Environmental Engineering Volume 15, Editor-in-Chief: Yung-Tse Hung, 2012

#### Peer-Reviewed Publications

- 1) J. Ananpattarachai, **P. Kajitvichyanukul**, Adsorption and Degradation of 2-Chlorophenol by  $\text{TiO}_2/\text{AC}$  and  $\text{TiO}_2/\text{CB}$  in Photocatalytic Process, *Chemical Engineering Transaction*, 2014 (in press)
- 2) J. Ananpattarachai, **P. Kajitvichyanukul**, Kinetics and mass transfer of fixed bed photoreactor using N-doped  $\text{TiO}_2$  for tannery wastewater under visible light, *Chemical Engineering Transaction*, 2014 (in press)
- 3) Y. Parcharoen, **P. Kajitvichyanukul**, S. Sirivisoot, P. Termsuksawad, Hydroxyapatite electrodeposition on anodized titanium nanotubes for orthopedic applications, *Applied Surface Science*, 311, 54-61, 2014
- 4) **P. Kajitvichyanukul**, J. Ananpattarachai, Adsorption. In *Encyclopedia of Environmental Management*, Taylor and Francis, 2013, 61-80.
- 5) **P. Kajitvichyanukul**, J. Ananpattarachai, A. Watcharenwong, Green Products: Production. In *Encyclopedia of Environmental Management*, Taylor and Francis, 2013, 1253-1261.
- 6) **P. Kajitvichyanukul**, J. Ananpattarachai, Toxic Substances: Photochemistry. In *Encyclopedia of Environmental Management*, Taylor and Francis, 2013, 2547-2571.
- 7) **P. Kajitvichyanukul**, J. Ananpattarachai, Nanotechnology: Environmental Abatement. In *Encyclopedia of Environmental Management*, Taylor and Francis, 2013, 1730-1745.
- 8) **P. Kajitvichyanukul**, J. Ananpattarachai, Y.-T. Hung, Biodegradability enhancement and toxicity reduction by  $\text{UV}/\text{H}_2\text{O}_2$  in the coupling of photochemical-biological processes for wastewater treatment, *International Journal of Environmental Engineering Science*, Vol 3, No1, p 17-31, 2012
- 9) **P. Kajitvichyanukul**, J. Voranisarakul, Y.-T. Hung, Evaluation of fixed bed photoreactor using immobilized  $\text{TiO}_2$  for electroplating wastewater treatment, *International Journal of Environmental Engineering Science*, Vol3, No1, p 1-16, 2012
- 10) S. Sinyoung, P. Songsiririthigul, S. Asvapisit, **P. Kajitvichyanukul**, Chromium behavior during cement-production processes: A clinkerization, hydration, and leaching study, *Journal Hazardous Material*, Vol 191 (1-3), 296-305, 2011
- 11) S. Sinyoung, S. Asavapisit, **P. Kajitvichyanukul**, P. Songsiririthigul, Speciation of Cr in cement clinkers obtained from co-burning with  $\text{Cr}_2\text{O}_3$ , *Nuclear Instruments and Methods in Physics Research*, 649 (1), 210-212, 2011
- 12) K. Somna, C. Jaturapitakkul, **P. Kajitvichyanukul**, P. Chindaprasert, NaOH-activated ground fly ash geopolymer cured at ambient temperature, *Fuel*, Vol 90 (6), 2118-2124, 2011
- 13) C. Jaturapitakkul, K. Somna, **P. Kajitvichyanukul**, A study of the microstructure of calcium carbide residue-ground fly ash paste, *Journal of Materials in Civil Engineering*, American Society of Civil Engineering, 23(3), 298-304, 2011
- 14) J. Ananpattarachai, **P. Kajitvichyanukul**, S. Seraphin, Visible light absorption ability and photocatalytic oxidation activity of various interstitial N-doped  $\text{TiO}_2$  prepared from different nitrogen dopants, *Journal of Hazardous Materials*, Vol 168(1), 253-261, 2009

- 15) K. Rajeshwar, M.E. Osugi, W. Chanmanee, C.R. Chenthamarakshan, M.V.B. Zaroni, **P. Kajitvichyanukul**, R. Krishnan-Ayer, Heterogeneous photocatalytic treatment of organic dyes in air, aqueous media, *Journal of Photochemistry and Photobiology C: Photochemistry Reviews*, Vol. 9(4), 171-192, 2008
- 16) W. Chanmanee, A. Watcharenwong, C. R. Chenthamarakshan, **P. Kajitvichyanukul**, N. R. de Tacconi, K. Rajeshwar, "Formation and Characterization of Self-Organized TiO<sub>2</sub> Nanotube Arrays by Pulse Anodization", *Journal of the American Chemical Society*, Vol. 130(3), 965-974, 2008
- 17) A. Watcharenwong, W. Chanmanee, C.R. Chenthamarakshan, N. R. de Tacconi, **P. Kajitvichyanukul**, K. Rajeshwar, Anodic growth of nanoporous WO<sub>3</sub> films: morphology, photoelectrochemical response and photocatalytic activity for methylene blue and hexavalent chrome conversion, *Journal of Electroanalytical Chemistry*, Vol. 612, Iss. 1, 112-120, 2008
- 18) K. Somna, C. Jaturapitakkul, **P. Kajitvichyanukul**, P. Chindaprasirt, Immobilization of Heavy Metals by Fly Ash-Based Geopolymer, *KKU Research Journal*, Vol. 13, Iss. 10, 1191-1198, 2008
- 19) **P. Kajitvichyanukul**, M.-C. Lu, A. Jamroensan, Formaldehyde Degradation in the Presence of Methanol in Photo-Fenton Process, *Journal of Environmental Management*, Vol. 86, No. 3, 545-553, 2008
- 20) A. Watcharenwong, W. Chanmanee, C.R. Chenthamarakshan, N. R. de Tacconi, **P. Kajitvichyanukul**, K. Rajeshwar, Self-organized TiO<sub>2</sub> nanotube arrays by anodization of Ti substrate: Effect of anodization time, voltage and medium composition on oxide morphology and photoelectrochemical response, *Journal of Materials Research*, Vol. 22, No. 11, 3186-3195, 2007
- 21) K. Khuanmar, W. Wirojanagud, **P. Kajitvichyanukul**, S. Maensiri, Photocatalysis of Phenolic Compounds with Synthesized Nanoparticles TiO<sub>2</sub>/Sn<sub>2</sub>, *Journal of Applied Sciences*, Vol.7, Iss. 14, 1968-1972, 2007
- 22) W. Chanmanee, A. Watcharenwong, C. R. Chenthamarakshan, **P. Kajitvichyanukul**, N. R. de Tacconi, K. Rajeshwar, Titania nanotubes from pulse anodization of titanium foils, *Electrochemistry Communications*, Vol.9, Iss. 8, 2145-2149, 2007
- 23) Y.-T. Hung, **P. Kajitvichyanukul**, T. D. Pham, S. Pongpom, W. Chanmanee, R. Y.-L. Yeh, "Chemicals and Allied Product", *Water Environment Research*, Literature Review; Vo. 78, No.10, 1585-1619, 2006
- 24) **P. Kajitvichyanukul**, N. Suntronvipart, Evaluation of Biodegradability and Oxidation Degree of Hospital Wastewater Using Photo-Fenton Process as the Pretreatment Method, *Journal of Hazardous Materials*, Vol. 138, Issues 2, 384-391, 2006
- 25) **P. Kajitvichyanukul**, M. C. Lu, W. Wirojanakud, T. Koottatep "Degradation and Detoxification of Formaline Wastewater Using Advanced Oxidation Processes" *Journal of Hazardous Materials*, Vol. 135, Issues 1-3, 337-343, 2006
- 26) **P. Kajitvichyanukul** A. Saiyanite, "Reaction of Hydroxyl Radicals from UV/H<sub>2</sub>O<sub>2</sub> in Degradation of Medical Wastewater, *Thai Environmental Engineering Journal*, Vol. 20, No. 3, 93-103, 2006
- 27) **P. Kajitvichyanukul**, N. Suntronvipart, Degradation of Hospital Wastewater Using Photo-Fenton: Effects of Operational Parameters, *Thai Environmental Engineering Journal*, Vol. 20, No. 3, 81-91, 2006
- 28) **P. Kajitvichyanukul**, S. Jirapattarasakul, "Effect of Diethanolamine on Property of Thin Film TiO<sub>2</sub> in Treating Hexavalent Chromium from Aqueous Solution, *Thai Environmental Engineering Journal*, Vol. 20, No. 1, 101-110, 2006

- 29) **P. Kajitvichyanukul**, J. Ananpattarachai, S. Pongpom "Sol-Gel Preparation and Properties Study of TiO<sub>2</sub> Thin Film for Photoreduction of Chromium(VI) in Photocatalysis Process" *Science and Technology of Advanced Materials Journal*, Vol. 6, Issues 3-4, 352-358, 2005
- 30) **P. Kajitvichyanukul**, P. Amornchat, "Effects of Diethylene Glycol on TiO<sub>2</sub> Thin Film Properties Prepared by Sol-Gel Process", *Science and Technology of Advanced Materials Journal*, Vol. 6, Issues 3-4, 344-347, 2005
- 31) Y.-T. Hung, **P. Kajitvichyanukul**, H. H. Lo., V. Ivanov, L. K. Wang "Chemicals and Allied Products", *Water Environment Research*, Vol. 77, No. 6, 2005, p. 1770-1828
- 32) **P. Kajitvichyanukul**, A. Vatcharenwong, "Role of pH, Organic and Inorganic Anions on Photocatalytic Reduction Of Chromium(VI) with Titania Powders", *Asean Journal on Science and Technology for Development*, Vol. 22, No. 1&2, 169-179, 2005
- 33) **P. Kajitvichyanukul**, C. Changul. "Photocatalytic Removal of Tri- and Hexa-valent Chromium from Chrome-Electroplating Wastewater", *Asean Journal on Science and Technology for Development*, Vol. 22, No. 4, 355-362, 2005
- 34) **P. Kajitvichyanukul** and T. Sungkaratana "Photocatalytic Removal of Zinc (II) In UV- irradiated titania suspensions" *1*, Vol. 6, Issue 2, 111-124, 2005
- 35) **P. Kajitvichyanukul**, K. Daramueng, A. Vatcharenwong "Acid and Alkali Extraction of Trivalent Chromium from Titanium Dioxide Surface" *Songkhlanakarin Journal of Science and Technology*, Vol. 27, No. 2, 47-53, 2005
- 36) **P. Kajitvichyanukul**, P. Amornchat, A. Vatcharenwong, J. Ananpattarachai, "Structure and Photocatalytic characteristics of TiO<sub>2</sub> Thin Film coated on Stainless Steel for Chromium(VI) Removal Application, *Chiang Mai Journal of Science*, Vol. 3, 79-86, 2005
- 37) **P. Kajitvichyanukul**, P. Pongpom, A. Vatcharenwong, J. Ananpattarachai, "Effects of Acetyl Acetone on Property of TiO<sub>2</sub> Thin Film for Photocatalytic Reduction of Chromium (VI) from Aqueous Solution, *Chiang Mai Journal of Science*, Vol. 3, 87-93, 2005
- 38) **P. Kajitvichyanukul**, A. Vatcharenwong. "Contradiction Effect of pH on the Photocatalytic Reduction of Chromium(VI) and Thallium(I)". *Asean Journal of Science and Technology for Development*, Vol. 21, No.4, 269-280, 2004
- 39) **P. Kajitvichyanukul**, A. Vatcharenwong, "Adsorption Behavior of Chromium (VI) on Titanium Dioxide Surface" *Thai Environmental Engineering Journal*, Vol. 18, No. 1, 87-95, 2004
- 40) **P. Kajitvichyanukul**, A. Taweekitwanich, N. Toyam, S. Pongpom. "Effect of Organic and Inorganic Ions on Chromium Adsorption Onto TiO<sub>2</sub> Surface" *Asean Journal of Science and Technology for Development*, Vol. 21, No. 2 & 3, 249-258, 2004
- 41) **P. Kajitvichyanukul**, C. R. Chenthamarakshan, K. Rajeshwar and S. R. Qasim "Adsorption of Thallium(I) Ions on Titania Particle Surfaces in Aqueous Media" *Adsorption, Science and Technology*, Vol. 21, No. 3, pp. 217-228, 2003
- 42) **P. Kajitvichyanukul**, C. R. Chenthamarakshan, S. R. Qasim and K. Rajeshwar "Photocatalytic Reactivity of Thallium(I) species in Aqueous Suspensions of Titania" *Journal of Electroanalytical Chemistry*, Vol. 519, pp. 25-32, 2002
- 43) **P. Kajitvichyanukul**, C. R. Chenthamarakshan, S. R. Qasim and K. Rajeshwar "Adsorbed Thallium(I) Ions As A Probe of Surface Charge in UV-Irradiated Titania Aqueous Solution Interfaces" *Langmuir*, Vol. 17, pp. 3792-3795, 2001

## INVITED SPEAKER

*Invited Speaker*, “Photocatalytic Membrane Reactor for Water and Wastewater Applications”, 4<sup>th</sup> IWA Regional Conference on Membrane Technology, Ho Chi Minh City, Vietnam, December 3-6, 2014

*Invited speaker*, “Food Safety and policy: Thailand Experience”, 4<sup>th</sup> International Public Health Conference, Putrajaya, Malaysia, August 26-28, 2014

*Invited speaker*, “Enhancement of Adsorption and Degradation of Organic Pollutants by Carbonaceous Materials in Photocatalytic Process”, Water Treatment Session, The 8th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik, Croatia, September 22-27, 2013

*Invited speaker*, “Nanosafety Guideline for Research Laboratories”, BOI Fair 2011, Impact Arina, January, 2012

*Invited speaker*, “Environmental Nanotechnology”, National Engineering 2011, The Engineering Institute of Thailand, Queen Sirikit National Conventional Center, March, 2011

*Invited speaker*, “Development of Nano-Face Mask for Air Pollution Protection”, NSTDA Annual Conference, National Science and Technology Development Agency, Thailand, March, 2009

*Invited speaker*, “Nano-Risk Assessment”, NSTDA Annual Conference, National Science and Technology Development Agency, Thailand, March, 2009

*Invited speaker*, “Nano-Pollution: Next Challenge for Environmental, Health, and Safety”, Pure and Applied Chemistry International Conference 2009, Naresuan University, Phitsanulok, Thailand, January, 2009

*Invited speaker*, “Nanotechnology for Environmental Application and Nano-Toxicity”, Integrated Nanotechnology Research Center, Khon Kaen University, Thailand, June, 2008

*Invited speaker*, “Thin Film TiO<sub>2</sub> for Environmental Application”, National Science and Technology Development Agency and Thammasat University, Thailand, December, 2007

*Invited speaker*, “Heavy metals contamination in cement product and their effects on cement properties”, Siam City Cement Company Limited, 2006

*Invited speaker*, “Research Direction in Solving Environmental Problem”, Thai Environmental and Community Development Association (Majiceyes), 2005

*Invited speaker*, “Application of TiO<sub>2</sub> on Environmental Abatement”, Seminar on Nanotechnology Frontier, Khon Kaen University, Thailand, January 15, 2005

*Invited speaker*, “Environmental monitoring for solid and hazardous waste problem”, Pollution Control Department, Ministry of Natural Resource and Environmental, Thailand, September 13-17, 2004

## CONFERENCE AND WORKSHOP ORGANIZATION

*Chair of Organizing Committee*, The International Conference on Safe and Sustainable Nanotechnology (GTSNN2014), Phitsanulok, Thailand, October 14-17, 2014

*International Advisory Committee*, The 2014 Int'l Conference on Advanced Environmental Science and Technology (AEST14), Busan, Korea, August 24-29, 2014

*Scientific Advisory Board*, The 8th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik, Croatia, September 22-27, 2013

*International Program Committee*, IASTED International Conference on SCIENCE AND TECHNOLOGY INNOVATION FOR SUSTAINABLE DEVELOPMENT in Water Resources Management (AfricaWRM 2008), Gaborone, Botswana, September 8-10, 2008.

*International Program Committee*, IASTED International Conference on Water Resources Management (WRM 2007), Honolulu, Hawaii, USA, August 20-22, 2007.

*International Program Committee*, IASTED International Conference on Environmentally Sound Technology in Water Resources Management (ESTW 2006), Gaborone, Botswana, September 11- 13, 2006.

*International Program Committee*, International Conference on Hazardous Waste Management for a Sustainable Future, Thailand, January 10-12, 2005

*Chair*, Workshop on Nanotechnology for Environmental Abatement, International Conference on Hazardous Waste Management for a Sustainable Future, Thailand, January 9, 2005

*Conference Secretariat and Chair of Steering Committee*, ASIAN WATERQUAL2003, International Asia-Pacific Conference, sponsored by International Water Association (IWA), United States-Asia Pacific Environmental Partnership (USAEP), Thailand, October 20-23, 2003

## HONORS AND AWARDS

- Distinguished Researcher Award, Naresuan University, 2012
- The Marquis Who's Who, 2011
- Distinguished Alumni Award, Faculty of Engineering, Chiang Mai University, 2008
- International Foundation of Science Grantee, Sweden, 2007
- Research Presentation Award, Thailand Research Fund (TRF), Thailand, 2005
- Excellence Student Award, College of Engineering, University of Texas at Arlington, 2002
- National Dean's List – University of Texas at Arlington, 2002
- Tau Beta Pi, The Engineering Honor Society, USA, 2001
- Chi Epsilon, The Civil Engineering Honor Society, USA, 2000
- Science and Technology scholar, National Energy Policy Office, Ministry of Science and Technology, Thailand, 1998

## PROFESSIONAL EXPERIENCES

### 2012

*Project Director*, Integrated Research in Enhancing Community Capacity for Prevention and Management of Toxic Substance Contamination in Nan-Watershed Area, supported by National Research Council, Thailand – \$170,000

*Principal Investigator*, Environmental Contamination Assessment of Toxic substances and Determination of Critical Condition of Nan-Watershed, supported by National Research Council, Thailand -\$70,000

*Principal Investigator*, A Development of Database on Safety of Manufactured Nanomaterials, supported by National Nanotechnology Center, National Science and Technology Development Agency - \$17,000

*Principal Investigator*, Workshops on Building Awareness and Understanding in Nanotechnology and Nanomaterial Safety Management, supported by Thailand Research Fund – \$34,000

*Principal Investigator*, Development of Supplementary Product for Agriculture using Chemical Technology Phase I: Controlled Releasing Urea and Soil Amendment for Paddy Field, supported by Agricultural Research Development Agency - \$140,000

### 2011

*Principal Investigator*, Development of Processes and Network in Environmental Monitoring related to Environmental Health Impact: A Case Study of Pichit Province, supported by Health Systems Research Institute - \$10,000

### 2010

*Principal Investigator*, Feasibility Study on Waste to Energy for Pattaya Municipality, Submitted to Provincial Electricity Authority, Thailand -\$103,000

*Principal Investigator*, Landfill Design for Sam-Ngo Subdistrict Municipality, Tak, Submitted to Sam-Ngo Subdistrict, Tak – \$10,000

*Co-Principal Investigator*, Feasibility Study on Waste to Energy for Phitsanulok Province, Submitted to Provincial Electricity Authority, Thailand -\$100,000

*Principal Investigator*, Code of Conduct for Nanoscience and Nanotechnology Research, Thailand Research Fund, Thailand -\$80,000

### 2008

*Project Director*, Fabrication and surface modification of metallic implant in improving engineering properties and biocompatibility, National Research Council, Thailand - \$100,000

*Principal Investigator*, Fabrication of hydroxyapatite on nanotubular TiO<sub>2</sub> for metallic implant, National Research Council, Thailand -\$34,000

### 2007

*Principal investigator*, Degradation of p,p'-DDT in water contamination using visible light absorbing TiO<sub>2</sub>, supported by International Foundation for Science, Sweden -\$12,000

*Principal investigator*, Development of facemask for air pollution using titanium dioxide, supported by National Nanotechnology Center, National Science and Technology Development Agency -\$67,000

### 2006



*Principal Investigator*, Analysis of Heavy Metals in Cement Mortar Derived from Co-burning with Industrial Waste by Synchrotron Radiation and Their Long-term Leaching Behavior, Supported by National Synchrotron Research Center – \$17,000

*Principal Investigator*, Development of Scale to Predict the Effect of Heavy Metals (Chromium, Cadmium, and Zinc) on Cement Properties, Supported by The Thailand Research Fund and Siam City Cement Company Limited– \$17,000

## **2005**

*Principal Investigator*, Influence of Cadmium on Cement Properties and Leaching Analysis, Supported by The Thailand Research Fund and Siam City Cement Company Limited – \$17,000

*Project Manager*, Green University: Solid Waste Management, King Mongkut's University of Technology Thonburi, supported by Energy and Policy Planning Office, Thailand – \$20,000

## **2004**

*Principal Investigator*, Photocatalysis Prototype Development for Chromium Removal and Recovery from Industrial Wastewater, Supported by National Metal and Materials Technology Center, National Science and Technology Development Agency, Thailand - \$100,000

*Principal Investigator*, Influence of Vanadium on Cement Properties and Leaching Analysis, Supported by The Thailand Research Fund and Siam City Cement Company Limited – \$17,000

*Principal Investigator*, Preparation of Thin Film Titanium Dioxide Using Sol-Gel Method for Contaminant Removal from Water/Wastewater, Supported by National Research Center for Environmental and Hazardous Waste Management, Thailand – \$17,000

## **2003**

*Principal Investigator*, Leaching Study of Heavy Metals from Cement Using Industrial Waste in Production Process, Supported by The Thailand Research Fund and Siam City Cement Company Limited – \$17,000

*Principal Investigator*, Application of Advanced Oxidation Processes as Pretreatment Method for Medical Wastewater, Supported by The Thailand Research Fund – \$17,000

*Principal Investigator*, Feasibility Study of Chromium Removal and Recovery from Electroplating Wastewater Using Photocatalysis Process, Supported by National Metal and Materials Technology Center, National Science and Technology Development Agency, Thailand - \$6,000

*Principal Investigator*, Zinc and Nickel Removal by Photocatalysis Process, Supported by King Mongkut's University of Technology Thonburi, Thailand - \$6,000

*Project Coordinator*, Waste Reduction and Recycle in Phuket, cooperated with Thai Environmental and Community Development Association (*Magiceyes*), Thailand under grant support by Energy and Policy Planning Office, Thailand - \$6,000

## **2002**

*Project Coordinator*, Waste Reduction and Recycle in Future Park Rungsit Supercenter, Bangkok, cooperated with Thai Environmental and Community Development Association (*Magiceyes*), Thailand

## **1998**

*Project Coordinator*, Solid Waste Reduction and Recycle in Rasburana Area, supported by Bangkok Metropolitan Administration, Thailand

**1997**

*Project Manager*, Expert System Development for Water Quality and Solid Waste Managements, supported by Pollution Control Department, Ministry of Science and Technology, Thailand

**1996**

*Project Manager*, Typical Models for Wastewater Treatment Plant and Solid Waste Management, supported by Department of Environmental Quality Promotion, Ministry of Science and Technology, Thailand

*Project Manager*, Performance Evaluation and Improvement of the Grease Traps of Nationwide Prathomsuksa Schools, collaborated with Thai Environmental and Community Development Association (Majiceyes) and supported by Pollution Control Department, Ministry of Science and Technology, Thailand