

## Curriculum Vitae

นางสาว ดวงแข บุตรกุล

Miss Duangkhae Bootkul

Srinakharinwirot University, Faculty of Science,  
Department of General Science, Gems and Jewelry division  
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### Education

- 2002-2006 Doctor of Philosophy in Materials Engineering  
The University of Sheffield, Sheffield, The United Kingdom  
Thesis: *The fibre sensor for cure monitoring in composite materials*  
Advisor: Professor Frank R Jones and Dr. Simon A Hayes
- 2001-2002 Master of Philosophy in Materials Engineering  
The University of Sheffield, Sheffield, The United Kingdom
- 1993-1996 Master of Engineering in Materials Technology  
King Mongkut's Institute of Technology Thonburi, Bangkok, Thailand  
Thesis: *The Characterization of Poly(pyrrole) Polymer Films for Electro-Chemical Sensors*  
Advisor: Dr. Krissanapong Kirtikara, Dr. Mithran Somasundrum  
and Professor Dr. Morakot Tanticharoen
- 1992-1993 Diploma in Materials Technology  
King Mongkut's Institute of Technology Thonburi, Bangkok, Thailand  
Research: *Conducting Poly(pyrrole) films polymers*
- 1986 - 1990 Bachelor of Science in Mathematics & Computer Science  
Chiang Mai University, Chiang Mai, Thailand  
Research: *Mathematical modeling for depreciation*

### Area of Expertise

- Gemological optical modification and characterization of natural gemstones by Ion Beam techniques
- Green composite materials for structural materials
- Gemological optical characterization of natural gemstones
- Diamond like carbon coating by Ion and plasma technique

### Professional Experience

- 1997- present Department of General science, Faculty of Science, Gems and Jewelry division  
Srinakharinwirot University, Bangkok, Thailand Current position : Lecturer
- 1996 -1997 Pilot Plant Development and Training Institute (PDTI)  
King Mongkut's Institute of Technology Thonburi, Bangkok, Thailand Position: Researcher
- 1990-1992 Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand Position: Programmer

### Honor and Award

- 10/2001-9/2006 The Royal Thai Government Scholarship for a full fellowship graduate study in England
- 12/2007-5/2009 NECTEC and Western Digital visiting research for Technology Transfer Program on the Magnetic Hard Disk Drive at Western Digital Company, Fremont, California, USA.

### Research grants

- Gemological optical modification of natural corundum gemstones by Ion Beams
- Diamond like carbon coating by plasma technique
- Green composite materials for structural materials

### Courses Taught

- Ion implantation on Gemstone
- Composite materials Technology
- Recording head technology (MEng KMITL)
- Polymeric Materials

### Research Experience

- Modification of gemstone by ion implantation
- Precious metal casting to enhance the product quality and quantity, including investigating and solving any problems concerning metallurgical and mechanical works

- Diamond Like Carbon surface coating by Ion and plasma technique
- The fiber sensor for cure monitoring in composite materials
- Development of specific chemical sensors using either redox films, catalytic metal surfaces or collector-generator techniques
- Powder Metallurgy on Particulate Materials Processing
- Head magnetic design for Magnetic storage technology in Hard Disk Drive
- Tribology and Reliability of Magnetic hard drive

### Characterization Specialist

- Raman spectroscopy
- Fourier transforms infrared (FTIR)
- Differential scanning calorimetry (DSC)
- Atomic Absorption (AA) spectroscopy
- Plastic injection molding
- Vacuum casting for precious metal
- Atomic Force Microscopy (AFM)
- Ion and plasma coating

### Publications (selected)

- **Bootkul, D.**, Seanphinitd, N., Supsermpol, B., Aramwita, C., Intarasiri, S., "Synthesis of Ti-doped DLC Film on SS304 steels by Filtered Cathodic Vacuum Arc (FCVA) technique for tribological improvement", Applied Surface Science, 310 (2014),293-299.
- Chulapakorn, T., Intarasiri, S., **Bootkul, D.**, Singkarat, S., "Identification of deposit types of natural corundum by PIXE", Nuclear Instruments and Methods in Physics Research B, 331 (2014),108-112.
- Intarasiri, S., Wijai khum, A., **Bootkul, D.**, Suwannakachorn, D., Yu, L.D., Tippawan, U., Singkarat S., "Development of vertical compact ion implanter for gemstones application", Applied Surface Science, 310 (2014), 94-99.
- **Bootkul, D.**, Supsermpol, B., Saenphinit, N., Aramwit, C., Intarasiri S., " Nitrogen doping for adhesion improvement of DLC Film deposited on Si substrate by Filtered Cathodic Vacuum Arc (FCVA) technique", Applied Surface Science, 310 (2014), 284-292.
- Aramwita, C., Intarasiri, S., **Bootkul, D.**, Tippawana, U., Supsermpol, B., Seanphinitd, N., Ruangkul, W., Yu L.D., "Effects of filtered cathodic vacuum arc deposition (FCVAD) conditions on photovoltaic TiO<sub>2</sub> films", Applied Surface Science, 310 (2014), 266-271.
- Juncomma, U. , Intarasiri, S., **Bootkul, D.**, Tippawan U., "Ion beam analysis of rubies and their stimulants", Nuclear Instruments and Methods in Physics Research B, 331(2014), 102-107.

- Intarasiri, S., **Bootkul, D.**, Tippawan U., "Investigation of Swift Heavy I-ion Irradiation Effects on Damage in Silicon Dioxide Thin Film", CMUJ NS Special Issue on Physics, 13(2)(2014), 595-603
- Aramwit, C., Intarasiri, S., **Bootkul, D.**, Tippawan, U., Supsermpol, B., Seanphinit, N., Ruangkul, W., Yu, L.D. "Synthesis and characterization of filtered-cathodic-vacuum-arc-deposited TiO<sub>2</sub> films for photovoltaic applications", Journal of Physics: Conference Series 423(1)(2013) art. no. 012005.
- **Bootkul, D.**, Intarasiri, S., Aramwit, C., Tippawan, U., Yu, L.D. "Formation of thin DLC films on SiO<sub>2</sub>/Si substrate using FCVAD technique", Nuclear Instruments & Methods in Physics Research Section B, 307(2013), 147-153.
- **Bootkul, D.**, Intarasiri, S., Srisataporn, B., Juncomma, U., Singkarat, S. "Overview of ion beam treatment of Gemstones in Thailand", Proceedings: GIT 2012, 252-255.
- Intarasiri, S., **Bootkul, D.**, Chulapakorn, T., Juncomma, U., Tippawan, U., Singkarat, S. "Overview of Gemological Analysis by Ion Beam Techniques at Chiang Mai University of Thailand", Proceedings: GIT 2012, 248-251.
- Juncomma, U., Intarasiri, S., Chulapakorn, T., **Bootkul, D.**, Tippawan, U., Singkarat, S. "Novel Ion Beam Technique for Lead Detection in Rubies", Proceedings: GIT 2012, 244-247.
- Srisataporn, B., **Bootkul, D.**, Kiratisin, A., Phichaikamjornwut, B., Singkarat, S. "Ion Beam Analysis of Spinel", Proceedings: GIT 2012, 220-223.
- Intarasiri, S., **Bootkul, D.**, Hallen, A., Yu, L.D., Singkarat, S. "Investigation of Tens-MeV Swift Heavy I-ion Irradiation Effects on Damage in Silicon Dioxide Thin Film". Proceedings; The 18th International Conference on Ion Beam Modification of Materials, 2nd - 7th September, 2012, Qingdao, China.
- **Bootkul, D.**, Intarasiri, S., Srisataporn, B., Juncomma, U., Singkarat, S. "Ion Beam Modification of Spinel ". Proceedings; The 18th International Conference on Ion Beam Modification of Materials, 2nd - 7th September, 2012, Qingdao, China.
- **Bootkul D.**, Intarasiri S., Kamwanna T., Tippawan U. and Singkarat S., "The Novel Technique for Modification Natural Corundum by Ion Beam", Proceedings of the 6th Annual Conference of the Thai Physics Society SPC2011. March 23-26, 2011. 264-267
- Intarasiri S., **Bootkul D.**, Yu L.D., Kamwanna T., Singkarat S. and Vilaithong T. "Gemological Modification of Thai Local Natural Gemstones by Ion Beams" Surface & Coatings Technology, 2009, 2788–2792