

CURRICULUM VITAE

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EDUCATION

March 1999 Ph.D. Environmental Engineering, Hokkaido University, Sapporo, Japan.

Dissertation title: "Modeling of Heat Transfer within the Human Body and its Application to Evaluation of Thermal Environment"

Supervisor: Professor Kiyoshi OCHIFUJI

March 1994 B.S. Environmental Engineering, Hokkaido University, Sapporo, Japan.

PROFESSIONAL EXPERIENCE

November 2005 – present: Associate Professor,

Department of Applied Quantum Physics and Nuclear Engineering, Faculty of Engineering, Kyushu University, Fukuoka, Japan.

June 2009 – March 2010: Visiting Researcher,

Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, USA.

Supervisor: Professor Constantine M. Megaridis and Professor Alexander L. Yarin

April 2002 – October 2005: Research Associate,

Department of Mechanical Engineering and Intelligent Systems, University of Electro-Communications, Tokyo, Japan.

Supervisor: Professor Yukio YAMADA

April 1999 – March 2002: Postdoctoral researcher,

Laboratory of Advanced Biomedical Engineering and Life Sciences, Center for Collaborative Research, The University of Tokyo, Tokyo, Japan.

Supervisor: Professor Kunihiko MABUCHI

TEACHING RESPONSIBILITIES

November 2005 – present (Kyushu University)

- Biological Thermal Engineering, Advanced Course (Graduate School of Systems Life Sciences)
- Seminar of Biological Thermal Engineering (Graduate School of Systems Life Sciences)
- Advanced Seminar in Systems Life Science (Graduate School of Systems Life Sciences)
- Basic Biological Transport Phenomena (Graduate School of Systems Life Sciences)
- Applied Physics (School of Engineering)
- Seminar of Quantum Physics III (School of Engineering)
- Seminar of Energy Science and Engineering (School of Engineering)

April 2002 – October 2005 (The University of Electro-Communications)

- Introduction to Mechanical Engineering (Department of Mechanical Engineering and Intelligent Systems)
- Basic Experiment of Mechanical Engineering (Department of Mechanical Engineering and Intelligent Systems)
- Physics Experiment (Public)

PEER-REVIEWED PUBLICATIONS

1. Naoto Kakuta, Naoki Okuyama, and Yukio Yamada: Removal of a hydrogenated amorphous carbon film

from the tip of a micropipette electrode using direct current corona discharge, *Review of Scientific Instruments* 81, 025103 (2010).

2. Naoto Kakuta, Katsuya Kondo, Atsushi Ozaki, Hidenobu Arimoto, and Yukio Yamada: Temperature imaging of sub-millimeter-thick water using a near-infrared camera, *International Journal of Heat and Mass Transfer* 52, 4221 (2009).
3. Naoto Kakuta, Hidenobu Arimoto, Hideyuki Momoki, Fuguo Li, and Yukio Yamada: Temperature measurements of turbid aqueous solutions using near-infrared spectroscopy, *Applied Optics* 47, 2227 (2008).
4. Shintaro Yokoyama, Michiyoshi Tao, and Naoto Kakuta: Prediction computer program for whole body temperatures and its application under various working level and thermal environmental condition combinations, *Industrial Health* 45, 118 (2007).
5. Shintaro Yokoyama, Takafumi Maeda, Masashi Kuramae, and Naoto Kakuta: Human thermal model expressing local characteristics of each segment, *Journal of the Human-Environmental System* 10, 51 (2007).
6. Takashi K. Saito, Itsuro Saito, Nobuyuki Nemoto, Koki Takiura, Toshinaga Ozeki, Naoto Kakuta, Takahiro Tohyama, Takashi Isoyama, and Tsuneo Chinzei: A multi-purpose eight-legged robot developed for an evaluation of a neural interface, *Springer Tracts in Advanced Robotics* 24, 385 (2006).
7. Naoto Kakuta, Naoki Okuyama, Mayu Watanabe, Kunihiko Mabuchi, and Yukio Yamada: Plasma-enhanced chemical vapor deposition method to coat micropipettes with diamond-like carbon, *Review of Scientific Instruments* 76, 075109 (2005).
8. Keisuke Matsushita, Kazuo Aoki, Naoto Kakuta, and Yukio Yamada: Fundamental study of reflection pulse oximetry, *Optical Review* 10, 482 (2003).
9. Naoto Kakuta, Shintaro Yokoyama, and Kunihiko Mabuchi: Human thermal models for evaluating infrared images, *IEEE Engineering in Medicine and Biology Magazine* 21, 65 (2002).
10. Shintaro Yokoyama, Naoto Kakuta, Yo Mizuta, and Kunihiko Mabuchi: Simulations of airflow and substance concentration around a human body, *Journal of Physiological Anthropology and Applied Human Science* 21, 215 (2002).
11. Naoto Kakuta, Shintaro Yokoyama, Mitsuyoshi Nakamura, and Kunihiko Mabuchi: Estimation of radiative heat transfer using a geometric human model, *IEEE Transactions on Biomedical Engineering* 48, 324 (2001).
12. Yo Mizuta, Naoto Kakuta, and Shintaro Yokoyama: A general system for three-dimensional fluid analyses on the basis of CFSV-model and its application to the airflow analysis around a human body, *Computational Fluid Dynamics Journal* 9, 528 (2001).

SELECTED CONFERENCE PROCEEDINGS (PRESENTATION EXPERIENCES)

1. Naoto Kakuta, Katsuya Kondo, Atsushi Ozaki, Hidenobu Arimoto, and Yukio Yamada: Temperature Imaging of Sub-Millimeter-Thick Water Using a Near-Infrared Camera, *Proceedings of 7th KSME-JSME Thermal and Fluids Engineering Conference*, H333, Sapporo, Japan, October 2008.

2. Naoto Kakuta, Atsushi Ozaki, Hidenobu Arimoto, and Yukio Yamada: Temperature measurement of bio-micro-aqueous solutions using near-infrared spectroscopy, *Biorheology* (Abstracts of 13th International Congress of Biorheology and 6th International Conference on Clinical Hemorheology, State Park, PA, USA, July 9-13, 2008), Vol. 45, No. 1, pp. 100-101, 2008.
3. Naoto Kakuta, Atsushi Ozaki, Fuguo Li, Hidenobu Arimoto, and Yukio Yamada: Measurement of temperature differences between micro-regions in water using near-infrared spectroscopy, *Proceedings of 29th Annual International Conference of the IEEE EMBS*, pp. 4564-4567, Lyon, France, August 2007.
4. Naoto Kakuta, Atsushi Ozaki, Hidenobu Arimoto, and Yukio Yamada: Temperature measurements of micro-regions in water using near-infrared spectroscopy, *Proceedings of the 8th Asian Thermophysical Properties Conference*, 23 (6 pages), Fukuoka, August, 2007.
5. Naoto Kakuta, Fuguo Li, Hidenobu Arimoto, and Yukio Yamada: Measurement of Water Temperature in Micro-Region Using Near Infrared Spectroscopy, *Journal of Biomechanics* (Abstracts of the 5th World Congress of Biomechanics), p.S380, Munich, Germany, August 2006.
6. Naoto Kakuta, Fuguo Li, and Yukio Yamada: A method for measurement of water temperature in micro-region using near infrared light, *Proceedings of the 3rd Korea-Japan Joint Seminar on Heat Transfer*, pp. 35-39, Seoul, Korea, September 2005.
7. Naoto Kakuta, Fuguo Li, and Yukio Yamada: A method for measurement of water temperature in micro-region using near infrared light, *Proceedings of 27th Annual International Conference of the IEEE EMBS*, 2226 (4 pages), Shanghai, China, September 2005.
8. Naoto Kakuta, Mayu Watanabe, Naoki Okuyama, Kunihiko Mabuchi, and Yukio Yamada: Micro-thermocouple probe for measurement of cellular thermal responses, *Proceedings of 6th KSME-JSME Thermal and Fluids Engineering Conference*, CE.04, Jeju, Korea, March 2005.
9. Naoto Kakuta, Naoki Okuyama, Mayu Watanabe, Kunihiko Mabuchi, and Yukio Yamada: Diamond-like carbon coating on micropipettes, *Proceedings of 26th Annual International Conference of the IEEE EMBS*, pp. 2454-2457, San Francisco, September 2004.
10. Naoto Kakuta, Yo Mizuta, and Yukio Yamada: General programs for bio-heat and mass transfer analyses, *Proceedings of 25th Annual International Conference of the IEEE EMBS*, pp. 2830-2833, Cancun, Mexico, September 2003.
11. Naoto Kakuta, Takafumi Suzuki, Takashi Saito, Yukio Yamada, and Kunihiko Mabuchi: Micro-thermocouple probe for measurement of cellular thermal responses, *Bio-, Micro-, and Nanosystems Conference Proceedings*, p. 29, New York, July 2003.
12. Naoto Kakuta, Takafumi Suzuki, Takashi Saito, Yukio Yamada, and Kunihiko Mabuchi: Micro-thermocouple probe for measurement of cellular thermal responses, *Proceedings of the Second Joint Meeting of the IEEE EMBS and the Biomedical Engineering Society*, p. 1662, Houston, October 2002.

SKILLS

Experimental Techniques:

- Vapor deposition, Ion sputtering
- Plasma-enhanced Chemical Vapor Deposition
- Focused Ion Beam
- Scanning Electron Microscopy
- Infrared Spectroscopy
- Cell culture: PC12 cell and brown adipose cell
- Cell operation: Laser manipulation, Laser scissors, Microinjection

Computer Simulation Techniques:

- Computational Fluid Dynamics (CFD): Incompressible flow, k - ε turbulence model
- Thermal conduction
- Finite Volume Method (FVM), Finite Difference Method (FDM)