

# Aulia M T Nasution

---

## Education

- **Ph D** : *Dr.rer.nat.* in Experimental Physics (Optical Diagnostics)  
Georg-August University of Göttingen, Germany 2006  
Promotor: Prof. Dr. Gerd Marowsky  
Co-promotor: Prof. Dr. Werner Lauterborn
- **M Sc.** : Medical Physics  
University of Science Malaysia (USM), Penang – Malaysia 1996  
Supervisor: Prof. Abd. Aziz Tajuddin, Ph D, BCN, FIPM
- **Ir.** : *Ingenieur* in Engineering Physics (Engineering Optics)  
Bandung Institute of Technology (ITB), Bandung - Indonesia 1993  
Supervisor: Prof. Dr. Andrianto Handojo, n.i.

## Research Experience

- Since Sep'11 : *Fulbright Visiting Scholar*  
Biomedical Optics Lab (Dr. Guoqiang Yu), Center for Biomedical Engineering (CBME), University of Kentucky, Lexington
- Sep 09 – Nov 09 : *DAAD Visiting Scholar*  
Clinical Photonics Lab (Dr. Alexandre Douplik), The Erlangen Graduate School in Advanced Optical Technologies (SAOT), Erlangen, Germany
- 2001 - 2006 : *PhD Student Researcher*  
Optical Diagnostics Group (Dr. Volker Beushausen<sup>‡</sup>)  
Laser laboratorium Göttingen, Göttingen, Germany
- 1995 - 1996 : *MS Student Researcher*  
Biophysics Lab, School of Physics, University Science Malaysia, Penang, Malaysia
- 1991 - 1992 : *Undergraduate Student Researcher*  
Lab of Optics, Dept. of Engineering Physics, Bandung Institute of Technology (ITB), Bandung, Indonesia

## Fellowships & Honors

- **Fulbright Senior Researcher Scholarship 2011-2012** for conducting research at the Biomedical Optics Lab, Center for Biomedical Engineering (CBME), University of Kentucky, Lexington.
- **DAAD Short-term Research Visit Scholarship** (Sept '09 – Oct '09) for research stay at the Clinical Photonics Lab (CPL). Erlangen Graduate School in Advanced Optical Technologies. Involved in Project titled *Development of Video Endoscopy Hyperspectral and Fluorescence Imaging Diagnostic and Biopsy/Microsurgery Guidance for Stomach Cancer*
- **Friedrich-Alexander Universität Erlangen-Nürnberg Guest Scientist Scholarship** for additional 1 month research stay at the CPL – SAOT (Nov'09).
- Recipient of **APA – Förderung Program** 2008 (EUR 10,000) from World University Service (WUS) - Deutsches Komitee e.V: i.e. Fiber-optics based spectroscopic measurement equipments and textbooks related to optics / photonics and biomedical engineering.
- **DAAD Scholarship** for pursuing PhD study at the Georg-August University of Göttingen, Germany (2000 – 2004).

## Research Interest

- Biophotonics / Biomedical Optics
- Optical Diagnostics & Metrology
- Optical Sensor Development
- Medical Instrumentation & Imaging (Physics & Engineering)

## Professional Societies

- OSA            Optical Society of America (ID # : 995841)
- SPIE          Society for Photo-Instrumentation Engineer (ID # : 3294043)
- EOS            European Optical Society (ID # : 1258472005 )
- IEE            Institute of Electrical and Electronics Engineers, and the  
IEEE Photonics Society (formerly *Laser and Electro-Optics Society -LEOS*)  
(ID #: 90728736)
- HFI            Indonesian Physical Society

## Teaching Experience

1998 – now : Faculty at the Dept. of Engineering Physics, Faculty of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya

- Postgraduate Level        :
  - Biomedical Photonics
  - Physics of Human Body
  - Fundamentals of Clinical Engineering
  - Advanced Engineering Physics
- Undergraduate Level     :
  - Optical Spectroscopy
  - Capita Selecta on Photonics: selected topics in *Biophotonics*
  - Medical Instrumentation
  - Engineering Optics
  - Photonics System
  - Laser & Optical Fiber
  - Physics of Wave
  - Fluid Mechanics
  - Heat & Mass Transfer

1994 – 1998: *Assistant Lecturer* at the Dept. of Engineering Physics, Faculty of Industrial Engineering, Institut Teknologi Sepuluh Nopember, Surabaya

- serving tutorials on    :
  - Physics of Wave
  - Laser & Optical Fiber
  - Engineering Mathematics II
  - Thermal System Engineering
  - Engineering Optics

## University Service:

- 2010 – 2012 : Local Coordinator, *Joint-Project Developing Sustainability, Energy, Environment, and Societal Change (Cluster Program of : Renewable Energy)*, a networking program funded by the *Deutsche Akademischer Austauschdienst (DAAD)* among the Universität Oldenburg, ITS, and the Nelson Mandela Metropolitan University (NMMU) - South Africa
- 2008 - 2012 : Head of Postgraduate Study Program in Engineering Physics, Dept. of Engineering Physics ITS
- 2007 – 2009 : Member of Senate, Faculty of Industrial Technology, representing the Dept. of Engineering Physics

- 2007 - 2008 : Head of Study Program of Diploma III in Instrumentation, Dept. of Engineering Physics ITS
- 2007-2008 : Chairman of the *Task Force* for Preparation of the establishing the Postgraduate Study Program in Engineering Physics – ITS.
- 2008 : Chairman of the *Workshop and National Seminar on Photonics Applications (SNAF-08)*, Surabaya 24 – 25 April 2008.

## Publications

### Theses

- ***Formaldehyde as Tracer to examine Mixture Formation in Spark-Ignited Engines***, Dr.rer.nat Dissertation, Fakultet fuer Physik, Georgia Augusta Universitaet zu Goettingen, Germany, 2006, (Promotor: Prof. Dr. Gerd Marowsky & Co. Promotor: Prof. Dr. Werner Lauterborn).
- ***Study on Suitability of Film and TLD (Termoluminescence doseimeter) LiF (Chip) Dental X-Ray Radiation output Parameters***, MSc. in Medical Physics' Final Project Report, Faculty of Physics, Universiti Sains Malaysia – USM, Penang-Malaysia, 1996, (Supervised by Prof. Dr. Abdul Aziz Tadjuddin).
- ***Study on Electrical Discharge Imaging for the Detection of Material's Imperfections***, Undergraduate Thesis - Final Project, Dept. of Engineering Physics – ITB Bandung, 1993, (Supervised by Prof. Dr. Andrianto Handojo, n.i.).

### Conference Paper

- M Hohmann, A Douplik, A **Nasution**, J Mudter, M Neurath, M Schmidt, *Phantoms of normal and abnormal tissues for calibration of hyperspectral reflectance and multispectral fluorescence video endoscopy: toward gastrointestinal diagnostics*, Proc. SPIE Vol 8087 – 95 Clinical and Biomedical Spectroscopy and Imaging II, 24 - 26 May 2011.
- Irianti, ND, **Nasution**, AMT, *Characterization of spectral absorbance for determining the reduction in protein's contents due to heating (study case of cow's milk)*, Proc. Biomedical Engineering Days 2010, Surabaya Oct. 9<sup>th</sup> 2010
- Septiadi, D., **Nasution**, AMT, *Surface Roughness Quantification Based on Texture Analysis*, Proc. The Int'l Conference on Advanced Computer Science and Information System (ICACSIS 2009), Jakarta 7 – 8 Dec. 2009.
- **Nasution**, AMT, Kusuma, WW, *Recognition of incremental changes in corneal ring (arcus-senilis) using the hybrid N-feature neural network (HNFNN)*, presented at the 4<sup>th</sup> Asian and Pacific-Rim Symposium on Biophotonics, Jeju Island, South Korea, 27 – 29 May 2009.
- **Nasution**, AMT, Ningtyas, NAK, *Simulation for predicting thermal effect in eye's tissues following a therapy using laser retinal photocoagulator*, Proc. of the 6<sup>th</sup> International Conference on Numerical Analysis in Engineering (NAE2009), Senggigi - Lombok Island, 15-16 May 2009.
- **Nasution**, AMT, Suryaningtyas, EK, *Comparison of Red Blood Cells Counting using two Algorithms: Connected Component Labeling and Backprojection of Artificial Neural Network*, Proc. IEEE Photonics Global @Singapore (Biophotonics), Singapore, 8<sup>th</sup> – 11<sup>th</sup> December 2008, DOI: 10.1109/IPGC.2008.4781402,
- **Nasution**, AMT, Suryaningtyas, EK, *Automated morphological processing for counting the number of red blood cell*, Proc. of the Int'l Joint Seminar in Engineering (IJSE 2008), Jakarta, August 4<sup>th</sup> – 5<sup>th</sup> 2008.
- **Nasution**, AMT, Ningtyas, NAK, *Finite element method for prior analysis of thermal effect on the retina which accompanying a laser therapy*, Proc. of the Int'l Joint Seminar in Engineering (IJSE 2008), Jakarta, August 4<sup>th</sup> – 5<sup>th</sup> 2008.
- **Nasution**, AMT, Noerjanto, B., Triwanto, L. , *Development of an inexpensive optical method for studies of dental erosion process in-vitro*, Proc. of SPIE vol. 7155 (9<sup>th</sup> International Symposium on Laser Metrology - LM-2008), Singapore, 30<sup>th</sup> June – 2<sup>nd</sup> July 2008.

- **Nasution, AMT, Noerjanto, B., Triwanto, L. , *Dissolubility of dental surface enamel due to acidity of mouth***, the 10<sup>th</sup> International Symposium on Optics Within Life Sciences (OWLS-10), NUS Singapore, Singapore, 2<sup>nd</sup> - 4<sup>th</sup> July 2008.
- **Nasution, AMT, *Fluorescence Lifetime Imaging as promising fingerprinting method to several diseases in medicine***, Proceeding of the National Seminar on Medical Instrumentation (INSTRUMED 2003), Surabaya, October 2003.

#### Invited Lectures

- ***Requirements Scheme for Education and Trainings in developing the Clinical Engineering Human Resources to support Indonesian Hospital Accreditation***, Workshop on Clinical Engineering: *Requirements for Hospital Accreditation in Indonesia through Enhancements in Medical Equipments Management*, Jakarta Dec 15-16 2010, Organized by the Study Program of Biomedical Technology - University of Indonesia and Department of Health Republic of Indonesia.
- ***Role of Biomedical Optics / Biophotonics in Diagnostics and Therapy***, Joint Symposium *Sharpening the collaboration of Biomedical Supporting Institutions toward excellent researches, appropriate & low cost local medical product*, Surabaya Oct 10 2010.
- Workshop *Developing Sustainability*, Carl von Ossietzky Universität Oldenburg, 19 – 20 November 2009
- ***Tissue Optics and its Possible Applications***, National Workshop on Photonics Applications – 2008, Surabaya 23 April 2008.
- ***The Role of Clinical Engineering : Enhancement the Safety of Healthcares***, Workshop on Enhancing the Maintenance Capability of Healthcare Equipments, Ministry of Health Republic Indonesia, Kuta-Bali, 16 - 19 April 2007.

Lexington, December 30<sup>th</sup> 2011



**Dr.rer.nat. Aulia M T Nasution**