

Chatdanai Lumdee, PhD

E-mail: chatdanai.lumdee@physics.gu.se (work), chatdanai.L@gmail.com (personal)

Phone: (+46) 076-077-4359

Website: clumdee.github.io

CORE COMPETENCES

- Expert in optical experimentation and characterization techniques such as microscopy and spectroscopy
- Expert in micro- and nano-fabrication and characterization techniques
- Excellent proficiency in data processing, analysis, and visualization using Python (Jupyter Notebook), Matlab, and Origin

Examples: [An analysis on average salaries in Thailand by occupation](#),
[Calculation and visualization of nearfield optical chirality](#)



- Knowledge in machine learning, data modeling, and validation
- Fundamental understanding in cluster computation with Spark
- Experience with front-end interface and building blocks (HTML, CSS, JavaScript)
- Ability to rapidly digest and implement complex ideas and to transfer knowledge in systematic manner
- Detail oriented experimentalist who formulates plan based on theories, observations, and critical thinking
- Experienced problem solver in and system designer for advanced scientific experiments
- Great technical writer and presenter (Thai and English) with a proven record of publications in top-tier scientific journals and presentations at international conferences
- A team player with experiences working in multi-cultural ecosystems
- Practitioner mindset aiming to develop advanced optics-related technologies by combining his expertise with those of experts in other fields
- In love with learning and improving oneself and the team as well as tackling challenges

Please find my [website](#) for additional information about me e.g. blog posts and examples of codes

EDUCATION

Ph.D. in Optics and Photonics

08/2010 – 12/2015

CREOL/The College of Optics and Photonics, University of Central Florida – Orlando, Florida, USA

GPA: 3.95/4.00

B.Eng. in Nano Engineering (major in Nanoelectronics)

08/2006 – 05/2010

Chulalongkorn University – Bangkok, Thailand

GPA: 3.91/4.00, Graduated with First Class Honors

RESEARCH CAREERS

Postdoctoral Research Scientist

04/2016 – present

Department of Physics, University of Gothenburg/Chalmers – Gothenburg, Sweden

Research topics: magnetoplasmonics, nanomagnetism

Research description: We are exploring the interplay between nanoscale optics and magnetism with the aim to develop a technological platform for the next generation of data storage units (a European Union's project in EU Horizon2020 program).

Responsibilities:

- Fabrication and characterization (structurally, optically, and magneto-optically) of hybrid metallic-magnetic nanostructures that enhance inter-coupling between optics and magnetism
- Performing numerical simulation with Lumerical to predict and to confirm experimental observations
- Data analysis and visualization with Python to get insights, to distill, and to summarize results
- Design and optimize experiment and construct experimental control systems with Labview
- Working with collaborators from various places (on this and other side projects) e.g. Stanford University, Uppsala University, Technical University of Denmark, etc.

Graduate Research Scientist

08/2010 – 01/2016

CREOL/The College of Optics and Photonics – Orlando, Florida, USA

Research topics: nanophotonics, surface plasmon resonances, gap-plasmons

Research description: I spent my time studying how nanoscale objects and light interact. This research area is the core foundation of several emerging technologies including single-molecular sensing, surface enhanced photocatalysis, and heat-assisted magnetic recording.

Responsibilities:

- Optical characterization of *single* nanoparticles with various microscopy and spectroscopy techniques such as darkfield, fluorescence, and Raman scattering.
- Performing electromagnetic simulation to validate and add insights to experimental results (CST MICROWAVE STUDIO)
- Data analysis and visualization with Matlab and Origin
- Design and optimize experimental setup to improve measured data and pinpoint hypotheses
- Writing and presenting results in scientific journals and at conferences

SELECTED AWARDS

SPIE – The International Society for Optical Engineering

- 2014 Optics and Photonics Education Scholarship
- 2013 Student Author Travel Grant
- 2012 Student Chapter Officer Travel Grant

University of Central Florida

- 2013–2015 College of Graduate Studies – Research Excellence Fellowship
- 2012/13/14 College of Graduate Studies – Conference/Travel Fellowship
- 2013/14 Student Government Association – Conference Registration & Travel Grant
- 2010–2011 CREOL – Graduate Student Fellowship

PROFESSIONAL SERVICES

- SPIE UCF Student Chapter President (2012–2013)
- Volunteer teaching assistant – Electronics II (EEL 4309) at UCF (Summer 2013)
- Reviewed and assisted in reviewing articles for scientific journals (ACS Nano, ACS Photonics, Applied Physics Letters, The Journal of Physical Chemistry)

JOURNAL PUBLICATIONS <<Impact Factor as of 2016>>

- [7] C. Lumdee and P. G. Kik, “**Omnidirectional Excitation of Sidewall Gap-Plasmons in a hybrid Gold-Aluminum Nanopore Structure**,” *APL Photonics* 2016, 1, 031301. <<IF = N/A>>
- [6] S. Novak, C. Li, N. Borodinov, Z. Han, C. Monmeyran, N. Patel, Q. Du, C. Lumdee, P. G. Kik, W. Deng, A. Agarwal, J. Hu, I. Luzinov, K. Richardson, “**Electrospray deposition of uniform thickness $\text{Ge}_{23}\text{Sb}_7\text{S}_{70}$ and $\text{As}_{40}\text{S}_{60}$ chalcogenide glass films**,” *Journal of Virtual Experiments* 2016, 54379R3. <<IF = 1.325>>
- [5] C. Lumdee, B. Yun, and P. G. Kik, “**Effect of Surface Roughness on Substrate-tuned Gold Nanoparticle Gap Plasmon Resonances**,” *Nanoscale* 2015, 7, 4250-4255. <<IF = 7.760>>
- [4] S. Toroghi, C. Lumdee, and P. G. Kik, “**Heterogeneous Plasmonic Trimers for Enhanced Nonlinear Optical Absorption**,” *Appl. Phys. Lett.* 2015, 106, 103102. <<IF = 3.142>>
- [3] C. Lumdee, B. Yun, and P. G. Kik, “**Gap-Plasmon Enhanced Gold Nanoparticle Photoluminescence**,” *ACS Photonics* 2014, 1, 1224-1230. **(Cover article)** <<IF = 5.404>>
- [2] C. Lumdee, B. Yun, and P. G. Kik, “**Wide-band Spectral Control of Au Nanoparticle Plasmon Resonances on a Thermally and Chemically Robust Sensing Platform**,” *J. Phys. Chem. C* 2013, 117, 19127-19133. <<IF = 4.509>>
- [1] C. Lumdee, S. Toroghi, and P. G. Kik, “**Post-Fabrication Voltage Controlled Resonance Tuning of Nanoscale Plasmonic Antennas**,” *ACS Nano* 2012, 6, 6301-6307. <<IF = 13.334>>

CONFERENCE PRESENTATIONS (with a conference proceeding)

- *SPIE Optics + Photonics, 2014* – San Diego, CA **(Invited talk)**
C. Lumdee and P. G. Kik, “**Numerical Prediction of the Effect of Nanoscale Surface Roughness on Film-coupled Nanoparticle Plasmon Resonances**,” *Proc. 9163-91631I* (2014).

- *OSA Frontiers in Optics, 2013* – Orlando, FL
C. Lumdee, B. Yun, and P. G. Kik, “**Controlled Surface Plasmon Resonance on Stable Substrates as an Optimized Sensing Platform**,” *FTh3C. 8* (2013).
- *OSA Frontiers in Optics, 2013* – Orlando, FL
S. Toroghi, C. Lumdee, and P. G. Kik, “**Extreme Plasmon Resonant Field Enhancement in Multi-material Nanoparticle Trimers**,” *FTh3C. 3* (2013).
- *SPIE Optics + Photonics, 2013* – San Diego, CA
C. Lumdee, B. Yun, and P. G. Kik, “**Optical Characteristic and Numerical Study of Gold Nanoparticles on Al₂O₃ coated Gold Film for Tunable Plasmonic Sensing Platforms**,” *Proc. 8809-88091S* (2013).
- *SPIE Optics + Photonics, 2013* – San Diego, CA
S. Toroghi, C. Lumdee, and P. G. Kik, “**Cascaded Plasmon Resonances Multi-material Nanoparticle Trimers for Extreme Field Enhancement**,” *Proc. 8809-88091M* (2013).
- *SPIE Optics + Photonics, 2012* – San Diego, CA
C. Lumdee and P. G. Kik, “**Voltage Controlled Nanoparticle Plasmon Resonance Tuning through Anodization**,” *Proc. 8457-84570T* (2012).

OTHER PRESENTATIONS + POSTERS

- [4 talks] C. Lumdee, “Nano-optics with a spin: interplay between light and magnetism at the nanoscale,” *Seminar at [Chulalongkorn University, Naresuan University (in Thai), King Mongkut's Institute of Technology Ladkrabang, King Mongkut's University of Technology Thonburi (mini-seminar)]*, Feb 2017, Thailand.
- C. Lumdee and P. G. Kik, “Manipulating Light at the Nanoscale: Gap-plasmon Enhanced Optical Processes,” *Seminar at Mahidol University, Feb 2016*, Bangkok, Thailand.
- C. Lumdee, S. Toroghi, B. Yun, and P. G. Kik, “All-inorganic Substrate-tuned Nanoparticle Plasmon Resonances for Robust Biochemical Sensors,” *CREOL Affiliates Day 2014*, Orlando, FL, USA.
- C. Lumdee, “Film-coupled Nanoparticle Structures for Controlled Plasmonic Resonances,” *OSA UCF Chapter – CREOL Graduate Research Symposium 2013 (student talk series)*, Orlando, FL, USA.
- C. Lumdee, B. Yun, and P. G. Kik, “Wide-band Spectral Control of Au Nanoparticle Plasmon Resonances on a Thermally and Chemically Robust Sensing Platform,” *NanoFlorida 2013*, Gainesville, FL, USA.
- C. Lumdee, B. Yun, and P. G. Kik, “Post-Fabrication Voltage Controlled Resonance Tuning of Gold Nanoparticles,” *CREOL Affiliates Day 2012*, Orlando, FL, USA.
- S. Toroghi, C. Lumdee, and P. G. Kik, “Design and Performance of Cascaded Plasmonic Metamaterials for Optical Switching,” *Gordon Research Conference on Plasmonics 2012*, Waterville, ME, USA.
- P. G. Kik, A. Ghoshal, and C. Lumdee, “Spatially Resolved Leakage Radiation Spectroscopy of Integrated Plasmonic Microresonators,” *SPIE Defense and Security 2011*, Orlando, FL, USA.

- C. Srichan, C. Lumdee, A. J. Medford, T. Lomas, and A. Tuantranont, "Controlled Alignment of Electrospun Nanofiber on Inkjet Printed Patterns on Flexible Substrate," the 3rd *IEEE International NanoElectronics Conference (INEC) 2010*, Hong Kong, China.