LIN LEE CHEONG

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EDUCATION

Massachusetts Institute of Technology
PhD. in Electrical Engineering and Computer Science (EECS) Planned 2013
M.S. in EECS (2010) June 2010
- Thesis: Low-voltage spatial-phase-locked scanning-electron-beam lithography

National University of Singapore (NUS) June 2008
B. Eng. In Electrical Engineering, First Class Honors
- Minor in Materials Science and Engineering.
- Student exchange to University of California, Davis (Spring 2007)
- Senior Thesis: Controlled growth of tungsten nanocrystals on carbon nanotubes via ion-beam irradiation.

FELLOWSHIPS AND AWARDS

Nominated by MIT EECS department to apply for Intel PhD Fellowship Program	2012
Singapore Ministry of Foreign Affairs Scholarship	2004-2008
National Semiconductor Book Prize	2007
Dean's List	2007-2008
NUS Student Exchange Award	2007
Engineering Colors Award (Bronze)	2005
Malaysian International Physics Olympiad Team	2003
Malaysian National Physics Competition (1st in team, silver in individual category)	2003
Malaysian National Mathematics Olympiad (Honorable mention)	2003

SELECTED PUBLICATIONS

Three-dimensional photonic crystals by large-area membrane stacking, Ling Lu, Lin Lee Cheong, Henry I. Smith, Steven G. Johnson, John Joannopoulos and Marin Soljacic, Optics Letters, 2012 (accepted)

Scanning thermal probe lithography and pattern transfer, Lin Lee Cheong, Philip Paul, Felix Holzner, Michel Despont, Armin Knoll and Urs Duerig (in preparation)

Neon ion beam lithography, Donald Winston*, Vitor R Manfrinato*, Samuel M Nicaise*, Lin Lee Cheong*, Huigao Duan, David Ferranti, Jeff Marshman, Shawn McVey, Lewis Stern, John Notte and Karl K. Berggren, Nano Letters 11(1), 2011 ** authors contributed equally*
- Featured in Nature Nanotechnology, 6 (11), 2011

Sub-5keV scanning electron beam lithography in ultra-thin hydrogen silsesquioxane, V.R. Manfrinato, Lin Lee Cheong, Huigao Duan, Donald Winston, Henry I. Smith and Karl K. Berggren, Journal of Microelectronic Engineering 8 (10) 2011.
- Featured on mit.edu website: http://web.mit.edu/newsoffice/2011/future-chips-0630.html

Secondary-electron signal level measurements of self-assembled monolayers for spatial-phase-locked electron-beam lithography, Lin Lee Cheong, Jose M. Lobez, Euclid E. Moon, Jeffrey T. Hastings and Henry I. Smith, Journal of Vacuum Science and Technology B, 29 (6), 2011.

3D nanostructures by stacking pre-patterned fluid-supported single-crystal Si membranes, S. Ghadarghadr, C.P. Fucetola, Lin Lee Cheong, Euclid E. Moon and Henry I. Smith, Journal of Vacuum Science and Technology B, 29 (6), 2011.

INVITED POSTERS

55th Conference on electron, ion & photon beam technology & nanofabrication (EIPBN)	2011
Gordon Research Conference in Nanofabrication	
53rd EIPBN	2010
	2009

PROVISIONAL PATENTS FILED

Mesh-stack three dimensional photonic crystals by large area membrane stacking	2012

RESEARCH EXPERIENCE

IBM Research Zurich Summer Intern (with ETH Zurich, Switzerland) June – August 2012

- Under Dr. Urs Duerig and Dr. Armin Knoll of IBM Zurich's Micro- & nanofabrication division
- Developed a etch stack and process to transfer patterns fabricated by scanning thermal probe lithography
- Demonstrated 55nm-pitch resolution of dense lines and ~1nm line-edge roughness.

MIT Electrical Engineering Research Assistant 2008-Present

- Under Prof. Henry I. Smith, Co-director of Nanostructures Laboratory
- Developing silicon and III-V membrane fabrication technology for 3D nanostructures.
- Investigated resolution limits of electron-beam lithography at <5keV with hydrogen silsesquioxane and PMMA. Demonstrated 20nm period resolution for dense lines at 2keV and pattern transferred 30nm period lines into polymer.
- Investigated secondary electron signal levels of ultra-thin photoresist and self-assembled monolayers for feedback control.
- Investigated neon ions for lithographic applications.

NUS Undergraduate Research Program and Summer Intern 2005-2008

- Under Prof. John Thong, Director of Center for Integrated Circuits, Failure Analysis and Reliability.
- Irradiated carbon nanotubes with Ga ions to create defects, as nucleation sites for tungsten nanocrystals. Designed & assembled vacuum chamber with incandescent heating, sensors with fast ramping (~5s) to high temperatures.
- Developed process flow and performed dip-pen nanolithography with octa-deca-nethiol.
- Developed fabrication process of glass fiber tips via HF wet etching.

TECHNICAL SKILLS

Lithography	Interference lithography, focused ion beam lithography, electron beam lithography, photolithography, thermal-probe lithography
Microscopy/ Characterization	Scanning & transmission electron microscopy, optical microscopy, atomic force microscopy, ellipsometry, profilometry
Wet/Dry Processing	Wet etching, reactive ion etching, substrate cleaning, bonding, thermal evaporation
Programming	MATLAB, C, C++
Simulations	Finite element modeling, FDTD

SELECTED SERVICE, MEMBERSHIP AND ACTIVITIES

MIT Graduate Students Association (GSA) Academic Chair (2011)
Vice-President for Students Against Violations of Earth (2007)
Business Executive for Institute of Engineers, NUS chapter (2004)