

# Chenxi Lin

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## Work Experiences

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Senior Design Engineer	<b>ASML Brion Technologies</b>	Mar. 2014 – present
Research Assistant	<b>USC Nanophotonics Laboratory</b>	Aug. 2008 — Dec.2013

## Education

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**Ph.D.** **University of Southern California**, Los Angeles, California, 2008—2013  
Electrical Engineering – Electrophysics  
Research Advisor: Dr. Michelle L. Povinelli

**B.S.** **Peking University**, Beijing, China, 2004—2008  
Electronics Science and Engineering

## Research Experiences

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*Doctoral Research:* Theoretical and experimental study of optical absorption in nano-structured silicon thin films for photovoltaic applications

- Optical modeling and design of silicon nanowire and nanohole arrays as efficient light absorbers.
- Optical modeling study of the effect of plasmonic metal nanoparticles on nanowire absorption.
- Applied machine-based optimal design techniques to optimize the light-trapping and anti-reflecting performance in aperiodic silicon nanowire and nanorod structures.
- Clean-room fabrication of silicon nanomembranes with optimized aperiodic patternings.
- Developed a semiconductor membrane wet-transfer and alignment technique to facilitate optical characterization of absorption.
- Designed and built an optical measurement setup to characterize the optical absorption of the fabricated samples.
- Developed the fabrication process for prototype nano-structured silicon photodetectors.

## Journal Publications

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1. P. D. Anderson, **C. Lin**, and M. L. Povinelli, Effect of guided resonance modes on emission from GaN core-shell nanorod arrays, submitted to *Applied Physics A*, under review.
2. L. J. Mart ínez, N. Huang, J. Ma, **C. Lin**, E. Jaquay, and M. L. Povinelli, “Design and optical characterization of high-Q guided resonant modes in the slot-graphite photonic crystal lattice”, *Optics Express*, 21: 30975 (2013)
3. **C. Lin**, L. J. Mart ínez, and M. L. Povinelli, “Experimental broadband absorption enhancement in silicon nanohole structures with optimized complex unit cells”, *Optics Express* 21: A872 (2013)

4. **C. Lin**, L. J. Martínez, and M. L. Povinelli, “Fabrication of transferrable, fully-suspended silicon photonic crystal membranes exhibiting vivid structural color and high-Q guided resonance”, *Journal of Vacuum Science and Technology B*, 31: 050606 (2013)
5. N. Huang, **C. Lin**, and M. L. Povinelli, “Limiting efficiencies of tandem solar cells consisting of III-V nanowire arrays on silicon”, *J. Applied Physics* 112: 064321 (2012)
6. A. Madaria, M. Yao, C. Chi, N. Huang, **C. Lin**, R. Li, M. L. Povinelli, P. D. Dapkus, and C. Zhou, “Toward Optimized Light Utilization in Nanowire Arrays Using Scalable Nanosphere Lithography and Selected Area Growth”, *Nano Letters* 12: 2839 (2012)
7. **C. Lin**, N. Huang, and M. L. Povinelli, “Effect of aperiodicity on the broadband reflection of silicon nanorod structures for photovoltaics”, *Optics Express* 20: A125 (2011)
8. N. Huang, **C. Lin**, and M. L. Povinelli, “Broadband absorption of semiconductor nanowire arrays for photovoltaic applications”, *Journal of Optics*, special issue on Green Photonics, 14: 024004 (2012)
9. **C. Lin** and M. L. Povinelli, “Optimal design of aperiodic, vertical silicon nanowire structures for photovoltaics”, *Optics Express* 19: A1148 (2011)
10. **C. Lin** and M. L. Povinelli, "The effect of plasmonic particles on solar absorption in vertically aligned silicon nanowire arrays", *Applied Physics Letters* 97: 071110 (2010)
11. **C. Lin** and M. L. Povinelli, "Optical absorption enhancement in silicon nanowire arrays with a large lattice constant for photovoltaic applications", *Optics Express* 17: 19371 (2009)

## **Selected Conference Presentations**

1. **C. Lin**, L. J. Martínez, and M. L. Povinelli, “Experimental broadband absorption enhancement in silicon nanohole structures with optimized complex unit cells”, oral presentation at *OSA Renewable Energy and the Environment Congress*, Tucson, Arizona, November 2013.
2. **C. Lin**, N. Huang, and M. L. Povinelli, “Effect of aperiodicity on the broadband reflection of silicon nanorod structures for photovoltaics”, oral presentation at *Conference on Lasers and Electro-Optics*, San Jose, California, May 2012.
3. **C. Lin** and M. L. Povinelli, “Optimal design of aperiodic, vertical silicon nanowire structures for photovoltaics”, oral presentation at *OSA Renewable Energy and the Environment Congress*, Austin, Texas, November 2011.
4. **C. Lin** and M. L. Povinelli, “Engineering optical absorption in aperiodic silicon nanostructures for photovoltaic applications”, oral presentation at *SPIE Solar Energy Technology*, San Diego, California, August 2011.

## **Honors & Awards**

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USC Graduate School Travel Award	2013
USC Graduate School Theodore and Wen-Hui Chen Fellowship	2012
USC Ming Hsieh Institute Ph.D. Scholars	2012
Chinese Government Award for Outstanding Self-financed Chinese Students Studying Abroad	2011
Honorable Mention in the USC EE Department Best Research Paper Award	2010
USC Provost Fellowship	2008
Peking Univ. Excellent Graduate Award	2008
Peking Univ. JDS Uniphase Scholarship	2007
Peking Univ. Yang Fuqing & Wang Yangyuan Academician Scholarship	2005&2006
Peking Univ. Academic Excellence Award	2005&2006

## **Professional Activities**

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### **Peer-reviewed Journal Reviewers**

Optics Express, Optics Letters, Small, Nanoscale Research Letters, Journal of Optical Society of America (JOSA) B, Applied Optics, Applied Physics A, Chinese Physics B, Journal of Photonics for Energy, SpringerPlus.

### **Membership**

Optical Society of America (OSA) (Paid membership)