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ACADEMIC BACKGROUND

Ph.D., McMaster University June 2011

- Department of Engineering Physics
- Thesis: *Core-Shell Heterostructured Nanowires on Foreign Substrates for use in Opto-Electronic Applications*
- Advisor: Prof. Ray R. LaPierre

B.Eng., McMaster University June 2005

- Department of Engineering Physics
- Specialization in Solid State Physics and Opto-Electronic Devices

PROFESSIONAL POSITIONS

Assistant Professor/PI – Epitaxially-Integrated Nanoscale Materials and Devices Group 2015
Microsystems Engineering Ph.D. Program, Rochester Institute of Technology

Postdoctoral Research Associate – Nano-Semiconductor Materials and Devices Group 2011 – 2015
Micro and Nanotechnology Laboratory, University of Illinois at Urbana-Champaign

Graduate Researcher – Nanostructures and Opto-Electronics Research Laboratory 2006 – 2011
Centre for Emerging Device Technologies, McMaster University

Visiting Researcher – Semiconductors Research Group 2009
Physics Institute of São Carlos, University of São Paulo

Visiting Researcher – Department of Physics 2009
Center for Science and Technology, Federal University of São Carlos

Undergraduate Researcher – Opto-Electronics Research Laboratory 2004
Centre for Electrophotonic Materials and Devices, McMaster University

RESEARCH INTERESTS

Semiconductor physics	Photovoltaic solar cells
Nanostructure characterization	Crystal phase engineering
Low-dimensional nanomaterials	Flexible opto-electronic devices
MBE and MOCVD crystal growth	Emerging nano-lithography techniques
Electron microscopy for materials analysis	Analytic scan-probe microscopy techniques
Heterostructured semiconductor nanowires	Monolithic integration of III-V's and graphene
Fabrication and processing of MEMS/NEMS	Metal-assisted chemical etching of Si and III-Vs

SELECTED PUBLICATIONS IN PEER-REVIEWED JOURNALS (16 of 27)

1. K. P. Bassett, **P. K. Mohseni**, X. Li, *Evolution of GaAs Nanowire Morphology in Selective Area Epitaxy*, Applied Physics Letters **106**, 133102-5 (2015)

2. X. Miao, K. Chabak, C. Zhang, **P. K. Mohseni**, D. Walker Jr., X. Li, *High-Speed Planar GaAs Nanowire Arrays with $f_{max} > 70$ GHz by Wafer-Scale Bottom-Up Growth*, Nano Letters **15**, 2780-2786 (2015)
This work was selected as the cover article of Nano Letters, May 2015 issue.
3. S. H. Kim,[†] **P. K. Mohseni**,[†] Y. Song, I. Tatsumi, X. Li, *Inverse Metal-Assisted Chemical Etching Produces Smooth High Aspect Ratio InP Nanostructures*, Nano Letters **15**, 641-648 (2015)
[†]*Equal Contribution Authorship*
4. **P. K. Mohseni**, A. Behnam, J. D. Wood, X. Zhao, K. J. Yu, N. C. Wang, A. Rockett, J. A. Rogers, J. W. Lyding, E. Pop, X. Li, *Monolithic III-V Nanowire Solar Cells on Graphene via Direct van der Waals Epitaxy*, Advanced Materials **26**, 3755-3760 (2014)
5. K. Balasundaram, **P. K. Mohseni**, Y.-C. Shuai, D. Zhao, W. Zhou, X. Li, *Photonic Crystal Membrane Reflectors by Magnetic Field-Guided Metal-Assisted Chemical Etching*, Applied Physics Letters **103**, 214103-4 (2013)
6. **P. K. Mohseni**, S. H. Kim, X. Zhao, K. Balasundaram, J. D. Kim, L. Pan, J. A. Rogers, J. J. Coleman, X. Li, *GaAs Pillar Array-Based Light Emitting Diodes Fabricated by Metal-Assisted Chemical Etching*, Journal of Applied Physics **114**, 064909-6 (2013)
7. J. C. Shin, A. Lee, **P. K. Mohseni**, D. Y. Kim, L. Yu, J. H. Kim, H. J. Kim, W. J. Choi, D. M. Wasserman, K. J. Choi, X. Li, *Wafer-Scale Production of Uniform InAs_yP_{1-y} Nanowire Array on Silicon for Heterogeneous Integration*, ACS Nano **7**, 5463-5471 (2013)
8. **P. K. Mohseni**, A. Behnam, J. D. Wood, C. D. English, J. W. Lyding, E. Pop, X. Li, *In_xGa_{1-x}As Nanowire Growth on Graphene: van der Waals Epitaxy Induced Phase Segregation*, Nano Letters **13**, 1153-1161 (2013)
9. A. D. K. Finck, D. J. Van Harlingen, **P. K. Mohseni**, K. Jung, X. Li, *Anomalous Modulation of a Zero-Bias Peak in a Hybrid Nanowire-Superconductor Device*, Physical Review Letters **110**, 126406-5 (2013)
10. J. C. Shin, **P. K. Mohseni**, K. J. Yu, S. Tomasulo, K. H. Montgomery, M. L. Lee, J. A. Rogers, X. Li, *Heterogeneous Integration of Nanowires on the Rear Surface of Si Solar Cells for Efficiency Enhancement*, ACS Nano **6**, 11074-11079 (2012)
11. **P. K. Mohseni**, G. Lawson, A. Adronov, R. R. LaPierre, *Hybrid GaAs-Nanowire-Carbon-Nanotube Flexible Photovoltaics*, IEEE Journal of Selected Topics in Quantum Electronics **17**, 1070-1077 (2011)
12. Yu. A. Pusep, **P. K. Mohseni**, R. R. LaPierre, A. K. Bakarov, A. I. Toropov, *A Study of Disorder Effects in Random (Al_xGa_{1-x}As)_n(Al_yGa_{1-y}As)_m Superlattices Embedded in a Wide Parabolic Potential*, Applied Physics Letters **96**, 113106-3 (2010)
13. **P. K. Mohseni**, A. D. Rodrigues, J. C. Galzerani, Y. A. Pusep, R. R. LaPierre, *Structural and Optical Analysis of GaAsP/GaP Core-Shell Nanowires*, Journal of Applied Physics **106**, 124306-7 (2009)
14. **P. K. Mohseni** and R. R. LaPierre, *A Growth Interruption Technique for Stacking Fault-Free Nanowire Superlattices*, Nanotechnology **20**, 025610-6 (2009)

15. **P. K. Mohseni**, G. Lawson, C. Couteau, G. Weihs, A. Adronov, R. R. LaPierre, *Growth and Characterization of GaAs Nanowires on Carbon Nanotube Composite Films: Toward Flexible Nanodevices*, Nano Letters **8**, 4075-4080 (2008)
16. **P. K. Mohseni**, C. Maunders, G. A. Botton, R. R. LaPierre, *GaP/GaAsP/GaP Core-Multishell Nanowire Heterostructures on (111) Silicon*. Nanotechnology **18**, 445304-6 (2007)

INVITED PUBLICATIONS

1. X. Li and **P. K. Mohseni**, *Coaxial Nanowires from van der Waals Epitaxy*, SPIE Newsroom, DOI: 10.1117/2.1201309.005122 (2013)

SELECTED CONFERENCE PRESENTATIONS (3 of 37)

1. **P. K. Mohseni*** and X. Li, *III-V Nanowire Solar Cells on Graphene via Direct van der Waals Epitaxy*, 2014 Summer Topicals Meeting Series, IEEE Photonics Society, Montreal, Canada (2014)
2. **P. K. Mohseni** and X. Li*, *van der Waals Nanoepitaxy: Mechanism and Applications*, SPIE Optics + Photonics 2013, San Diego, USA (2013)
3. **P. K. Mohseni**, L. Pan, X. Zhao, S. H. Kim, K. Balasundaram, J. D. Kim, J. J. Coleman, X. Li*, *III-As Pillar Arrays by Metal-Assisted Chemical Etching for Photonic Applications*, Conference on Lasers and Electro-Optics, San Jose, USA (2013)

PRESS REPORTS AND RESEARCH PUBLICITY

Personal research highlights featured in: MIT Technology Review, IEEE Spectrum, Materials Today, Nanotechweb.org, Compound Semiconductor, Semiconductor Today, R&D Magazine, Phys.org, ScienceDaily.com, ACS Chemical & Engineering News, EurekaAlert.com, News Bureau Illinois, Aroundthewebdaily.wordpress.com, Printed Electronics World, eScienceNews.com, PhysNews.com, GrapheneTimes.com, SpaceDaily.com, Nanitenews.com, Nanotechnologytoday.blogspot.com, Treehugger.com, Azocleantech.com, Cleantecnica.com, The Toronto Star, The Hamilton Spectator, McMaster Daily News

PROFESSIONAL ASSOCIATIONS

IEEE Photonics Society	AVS: Prairie Chapter
Materials Research Society	American Physical Society
American Chemical Society	Microscopical Society of Canada
Canadian Association of Physicists	Society of Photo-Optical Instrum. Engineers

PEER REVIEW SERVICES

Reviewed articles for publication in:

ACS Nano	J. Appl. Phys.	Appl. Phys. Lett.
Phys. Status Solidi RRL	J. Mater. Chem. C	IOP Nanotechnology
ASC Cryst. Growth Des.	NPG Asia Materials	IOP Semicond. Sci. Technol