

CURRICULUM VITAE OF PROF. GUANGRUI (MAGGIE) XIA

Names and Position

Official name: Guangrui Xia

中文名: 夏光睿

Associate professor, Department of Materials Engineering,
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Education background

2000-2006	MASSACHUSETTS INSTITUTE OF TECHNOLOGY M.S. and Ph.D. in Electrical Engineering in 2003 and 2006 Minor: Circuit design	CAMBRIDGE, MA, US
1999-2000	CORNELL UNIVERSITY M. Eng. in Materials Science and Engineering, Aug. 2000.	ITHACA, NY, US
1994-1999	TSINGHUA UNIVERSITY B.S. in Computer Science, June 1999. B.S. in Materials Science and Engineering, June 1999.	BEIJING, CHINA

Employment history

July 2017-present	DEPARTMENT OF MATERIALS ENGINEERING, UBC Associate professor	VANCOUVER, CANADA
March 2008-June 2017	DEPARTMENT OF MATERIALS ENGINEERING, UBC Assistant professor with 2 maternity leaves in 2008 and 2011.	VANCOUVER, CANADA
June 2006-March 2008	IBM SEMICONDUCTOR R&D CENTER Process and Device Modeling Group, Research Engineer.	EAST FISHKILL AND YORKTOWN, NY, US

Research areas

SiGe materials and devices (CMOS, HBTs, Ge lasers), semiconductor processing and device modeling and simulations, Si-compatible lasers, 2D materials: black phosphorus, graphene, Raman spectroscopy, GaN high power devices, 3D integration of ICs

Student supervision

- Graduated 3 Ph.D. and 7 M.S. as the principal supervisor
- Graduated 1 M.S. as a co-supervisor
- Currently supervising 3 Ph.D. students (2 with SUSTech), 1 research assistant and 1 master student at UBC as the principal supervisor, and 1 master student at SUSTech as a co-supervisor

Teaching

Undergraduate level:

Engineering Materials (2nd year), Mass Transport Phenomena (3rd year), Engineering Case Study (4th year), Engineering Design Project (4th year), and Electronic Materials (4th year).

Graduate level: Physics of Microfabrication: Front End Processing.

Research funding

Total research funding secured around CAD \$1,900,000 (RMB 10,000,000) from Canadian government and industry, US and Japanese industry. Guangrui Xia is the sole or the leading PI for 100% of the funding received.

Editorship

Editor of Materials Science in Semiconductor Processing since May 2013

Invited conference presentations

1. Guangrui (Maggie) Xia, "Processing modeling in SiGe Devices". Presented at the 23rd annual International Conference on Simulation of Semiconductor Processes and Devices conference (SISPAD) in Austin, Texas in Sep. 2018. SISPAD is one of the longest-running conferences devoted to technology computer-aided design (TCAD), advanced modeling of novel semiconductor devices, and nano-electronic structures.
2. Guangrui (Maggie) Xia, "Dopant Diffusion and Segregation, Si-Ge interdiffusion and Defect Engineering in SiGe Devices". Presented at the European Solid-State Device Research Conference and the European Solid-State Circuits Conference (ESSDERC/ESSCIRC) in Sep. 2017. ESSDERC and ESSCIRC are the prime European conferences on nano-electronics technology and design with typically more than 500 attendees from all over the world.
3. Guangnan Zhou, Lee Kwang Hong, Chuan Seng Tan and Guangrui (Maggie) Xia, "Impacts of Doping on Ge Thin Film Quality and Si-Ge Interdiffusion", Photonics North 2017, June 2017, Ottawa, ON.
4. Guangrui (Maggie) Xia, "Ge lasers: performance, potential and roadmap", invited talk at Photonics North 2016 Conference, Quebec City, QC, May, 2016.
5. Guangrui (Maggie) Xia, "Interdiffusion and dopant diffusion in SiGe and SiGe:C systems", invited talk at 16th Canadian Semiconductor Science and Technology Conference, Thunder Bay ON, Aug. 2013.

Publications

36 referred journal papers, 12 conference papers and 2 book chapters.

Please refer to URL: <http://www.mtrl.ubc.ca/departement/faculty-staff/xia.php>

Among these, 21 journal papers were published with Xia as the first author or the correspondence author in IEEE Transactions on Electron Devices, Applied Physics Letters, Journal of Applied Physics, IEEE Transaction on Nanotechnology, IEEE Journal of Photonics, Optical Materials Express, Materials Letters, IEEE Transaction on Materials and Reliability etc.

Research funding and projects funded by Canadian government and industry:

NSERC = National Science and Engineering Council of Canada,

CFI = the Canada Foundation for Innovation

CRD = Collaborative Research and Development

Granting Agency	Subject	CAD\$ Per Year	Years	Principal Investigator
UBC	Start-up fund	77,000	2008-	Guangrui Xia
NSERC Discovery Grant	SiGe and stress technology for next generations of high performance electronic and photonic devices	140,000	2009-2015	Guangrui Xia
CFI Leader Opportunity Funds and BC matching fund	High resolution Raman micro-spectroscopy for nanoelectronic and photonic materials and devices	270,166	2011	Guangrui Xia
CFI Infrastructure Operating Fund	High resolution Raman micro-spectroscopy for nanoelectronic and photonic materials and devices	40,525	2014-2020	Guangrui Xia
NSERC CRD with Crosslight Software Inc.	Three-dimensional stress and Si-Ge interdiffusion modeling for semiconductor process simulation software CSUPREM	32,370 32,420	2011 2012	Guangrui Xia
NSERC CRD with Crosslight Software Inc.	Modeling and simulations of SiGe interdiffusion and ion implantation in CSUPREM	32,500 32,500	2013 2014	Guangrui Xia
MITACS Accelerate Program with Crosslight Software Inc.	Modeling of Current Collapse and Gate Leakage Phenomena in AlGaIn/GaN HEMTs	15,000	2015	Guangrui Xia
MITACS Accelerate Program with Lumerical Solutions Inc.	Process Modeling for Ge-on-Si Photodetectors	15,000	2015	Guangrui Xia
UBC NSERC General Research Fund	Doping impact on Si-Ge interdiffusion and defect density in Ge thin films	18,750	2016. 4 to 2017.3	Guangrui Xia

MITACS Accelerate Cluster Program with Lumerical Solutions Inc.	Multiphysics Simulation of Optoelectronic Devices, Circuits and Systems	26,666 in total for Xia's portion	2016.9 to 2018.8	Guangrui Xia, Lukas Chrostowski and others
NSERC Discovery Grant	Germanium for next generation photonic and microelectronic devices	120,000	2017-2021	Guangrui Xia

Research funding and projects funded by US and Japanese industry and by SUSTech:

Granting Agency	Subject	\$ Per Year	Years	Investigators
Texas Instruments, US	Vertical doping profile control for high speed PNP HBT	USD 181,350	2012.1 - 2015.6	Guangrui Xia
Texas Instruments, US	Phosphorus Segregation Study for Vertical Doping Profile Control in High-Speed SiGe PNP HBTs	USD 140,000	2015.10 - 2017.10	Guangrui Xia
Texas Instruments, US	Junction engineering for NPN heterojunction bipolar transistors	USD 359,730	2017.9-2020.9	Guangrui Xia
UBC-SUSTech joint PhD program	2D semiconductor and Gallium nitride contact modeling and fabrication	85,000	2017-2020	Guangrui Xia Co-PI: Hongyu Yu
UBC-SUSTech joint PhD program	New device structure for enhancement-mode GaN HEMTs	80,000	2018-2021	Guangrui Xia Co-PI: Hongyu Yu
Japan Patent Office	Fabrication and characterization of 2D material black phosphorus for ultra-thin and flexible electronic and photonic applications	16,360	2018-2019	Guangrui Xia