

SUMMARY

- **6 years** of experimental & theoretical experience with optical and nanoelectronic devices and materials.
- **7 years** of advanced measurement experience: electrical (DC - 110 GHz) and optical (visible, IR) systems and devices.
- **2 years** of precision RF measurements and calibrations (on-wafer, waveguide) of nanoelectronic devices and circuits.
- **10 years** of experience with Matlab programming focused on numerical and data analysis, mathematical modeling.
- **6 years** developing LabVIEW automated measurement systems, data acquisition, instrument control & drivers.
- Designed and fabricated a plasma asher using a consumer microwave oven for University of Iceland's cleanroom.

EDUCATION

- Ph.D. Electrical and Computer Engineering** **Expected October 2013**
• McGill University, Montreal, QC, Canada (Advised by Prof. Thomas Szkopek).
• Thesis title "*High-frequency Characterization and Applications of Graphene Devices*"
- M.Eng. Electrical and Computer Engineering** **October 2009**
• McGill University, Montreal, QC, Canada (Advised by Prof. Thomas Szkopek).
• Thesis title "*Optical Properties of Few and Many Layer Graphene Flakes*"
- B.Sc. Electrical and Computer Engineering and B.Sc. Physics** **June 2007**
• University of Iceland, Reykjavik, Iceland.

AWARDS

- Graduate Research Enhancement and Travel Awards **2012, 2013**
- McGill Engineering Doctoral Award, Clifford Pang Doctoral Fellowship **2009 - 2012**
- 3rd prize, CREER student poster contest, Montreal **2011**
- Icelandic Chamber of Commerce Award **2009**

RESEARCH EXPERIENCE

- Research Assistant (McGill University)** **2007 - present**
• Investigated electrical & optical properties and applications of graphene, a single atomic layer of carbon atoms.
• Developed several novel nanoelectronic devices and materials and published in high impact factor journals.
• Presented my work at various international conferences, including oral and poster presentation.
- Undergraduate Summer Research Assistant (University of Iceland)** **2005 - 2007**
• Measured thermal radiation of THz nanowire antennas. Phys. Rev. B. **78**, 085402 (2008).
• Designed and fabricated a plasma asher using a consumer microwave oven for University of Iceland's cleanroom (2005). See showcase video on <http://www.helgiskuli.com/>.
• Assisted a graduate student with fabrication process development for nano devices using scanning electron microscope (SEM) and electron beam lithography (EBL).

WORK EXPERIENCE

- Teaching Assistant (McGill University)** **2008 - 2012**
• 10 Teaching Assistant positions in Electric Circuits 1 & 2, Design Principles and Methods.
• Duties: giving tutorials, laboratory demos, grading and substitute lecturer.
- Teaching Assistant (University of Iceland)** **2005 - 2006**
• 3 Teaching Assistant positions in Solid State & Semiconductor Physics and Computer Hardware Fundamentals.
• Duties: giving tutorials, laboratory demos and grading.
- Construction Summer Jobs** **1999 - 2004**
• Foreman, heavy machinery operator and general construction duties.

SKILLS

• Laboratory & RF skills

- **7 years** of advanced measurement experience: electrical (DC - 110 GHz) and optical (visible, IR) systems and devices.
- **2 years** experience with precision RF measurement up to 110 GHz, precise on-wafer & waveguide calibrations (SOLT/TRM/TRL/SSLT). Anritsu 37XXX VNAs, Agilent N52XXX PNA-L/X.
- **6 years** developing LabVIEW automated measurement systems & user-friendly software, data acquisition, instrument control and instrument drivers.
- **6 years** of experimental & theoretical experience with novel optical and nanoelectronic devices and materials.
- Experience with various AC/DC instruments/sources, semiconductor parameter analyzers, characterization tools such as SEM, AFM and optical instruments/equipment.

• Computer skills

- **10 years** of experience with Matlab programming focused on numerical and data analysis, mathematical modeling.
- 16 years of programming experience (since age of 14) in 10+ programming languages, quick to learn new languages.
- Experience with HFSS, ADS, C/C++, Java, Simulink, PHP, MySQL, MS Office. MacOS, Windows, Linux.
- Extensive practical knowledge with semiconductor devices, physics, electrical measurements, design and characterization.
- Hands-on engineering experience, problem-solver and a can-do attitude.
- Experience with developing embedded systems (hardware + software) for hobby projects.
- 6 years of experience w. cleanroom fabrication, including developing fabrication processes for large-area graphene devices.
- Competed in robotic design competitions as an undergraduate student at Univ. of Iceland.
- Completed graduate courses in CMOS sensor microsystems, microwave electronics, nanoelectronic devices, optical engineering & waveguides, optoelectronic devices.

PUBLICATIONS (112 CITATIONS)

8. D. L. Sounas, **H. S. Skulason**, H.V. Nguyen, A. Guermoune, M. Siaj, T. Szkopek and C. Caloz. *Faraday Rotation in Magnetically-Biased Graphene at Microwave Frequencies*. Appl. Phys. Lett. **102**, 191901, 2013.
7. **H. S. Skulason**, H. Nguyen, A. Guermoune, V. Sridharan, M. Siaj, C. Caloz, and T. Szkopek. *110 GHz measurement of large-area graphene integrated in low-loss microwave structures*. Appl. Phys. Lett. **99**, 153504, 2011.
6. A. Guermoune, T. Chari, F. Popescu, S. Sabri, J. Guillemette, **H. S. Skulason**, T. Szkopek and M. Siaj. *Chemical vapor deposition synthesis of graphene on copper with methanol, ethanol, and propanol precursors*. Carbon. **49**, 4204-4210, 2011. **29 citations**.
5. P. E. Gaskell, **H. S. Skulason** and T. Szkopek. *High spatial resolution ellipsometer for characterization of epitaxial graphene*. Optics Letters. **35** (20), pp. 3336-3338, 2010.
4. **H. S. Skulason**, P. E. Gaskell and T. Szkopek. *Optical reflection and transmission properties of exfoliated graphite from a graphene monolayer to several hundred graphene layers*. Nanotechnology **21**, 295709, 2010.
3. P. E. Gaskell, **H. S. Skulason**, C. Rodenchuk and T. Szkopek. *Counting Graphene Layers on Glass via Optical Reflection Microscopy*. Appl. Phys. Lett. **94**, 143101, 2009. **38 citations**.
2. Y. Au, **H. S. Skulason**, S. Ingvarsson, L. J. Klein and H. F. Hamann. *Thermal radiation spectra from individual subwavelength micro-heaters*. Phys. Rev. B. **78**, 085402, 2008.
1. **H. S. Skulason**, S. Ingvarsson. *Rafgas í orbylgjuofni (e. Microwave Oven Plasma Etcher)*. Timarit um raunvísindi og stærðfræði (e. Icelandic Journal of Science and Math). **4** (2), 2006. (In Icelandic)

ORAL PRESENTATIONS

3. **H. S. Skulason**, H.V. Nguyen, A. Guermoune, M. Siaj, C. Caloz and T. Szkopek. *Contactless Impedance Measurement of Large-Area High-Quality Graphene*. Presentation at IEEE International Microwave Symposium 2012, Montreal, 17-22 June 2012.
2. **H. S. Skulason**, H. V. Nguyen, A. Guermoune, M. Siaj, C. Caloz, and T. Szkopek. *High-Frequency Coplanar Waveguide Graphene Circuit Components on Low-Loss Dielectric Substrates*. Graphene Technology: Production, Assembly and Applications, 12th International Conference on Science and Applications of Carbon Nanotubes, Cambridge, UK, 11-16 July 2011.

1. **H. S. Skulason**, P. E. Gaskell, C. Rodenchuk and T. Szkopek. *Counting Graphene Layers on Glass by Optical Reflection Microscopy*. American Physical Society March Meeting, Pittsburgh, 2009.

OTHER PRESENTATIONS

11. **H. S. Skulason**, D. L. Sounas, H. V. Nguyen, A. Guermoune, M. Siaj, C. Caloz, and T. Szkopek. *Magnetoconductance and Faraday Rotation in Graphene at Microwave Frequencies*. Presented at Graphene Week 2013, Chemnitz, Germany, June 2013.
10. **H. S. Skulason**, H. V. Nguyen, A. Guermoune, M. Siaj, C. Caloz, and T. Szkopek. *High-Frequency Coplanar Waveguide Graphene Circuit Components on Low-Loss Dielectric Substrates*. CREER, Montreal, Sept 14th 2011.
9. **H. S. Skulason**, H. V. Nguyen, A. Guermoune, M. Siaj, C. Caloz and T. Szkopek. *Integration of graphene into low-loss, high frequency coplanar waveguide circuits*. Presented at Graphene: The Road to Applications, Boston, May 11th 2011.
8. P. Gaskell, T. Chari, **H. S. Skulason**, M. Siaj and T. Szkopek. *Photochemical Reduction of Graphene Oxide by UV Photolithography*. Graphene Satellite Symposium, 11th International Conference on Science and Applications of Carbon Nanotubes, Montreal, 27-28 June 2010.
7. **H. S. Skulason**, P. E. Gaskell and T. Szkopek. *Optical Reflection and Transmission Properties from a Graphene Monolayer to Graphite*. Presented at Conference on Lasers and Electro-Optics / Quantum Electronics and Laser Science, San Jose, May 19th 2010.
6. P. E. Gaskell, **H. S. Skulason** and T. Szkopek. *Optical Reflectometry and Ellipsometry Measurements of Graphene and Thin Graphitic Films on Bulk Low-Index Substrates*. IEEE 3rd International Nanoelectronics Conference, pp. 1305-1306, 2010.
5. **H. S. Skulason**, P. E. Gaskell and T. Szkopek. *Optical reflection and transmission properties of exfoliated graphite from graphene to graphite on bulk transparent substrates*. Presented at Graphene Week 2010, College Park, Maryland, April 2010.
4. T. Szkopek, **H. S. Skulason**, P. Gaskell. *Optical properties of graphitic films from a graphene monolayer to bulk graphite*. Annual Meeting of GDR-I GNT (Graphene and Nanotubes: science and applications), Coma-ruga, Spain, 19-23 October 2009.
3. T. Szkopek, **H. S. Skulason**, P. Gaskell. *Optical properties of graphitic films from a graphene monolayer to bulk graphite*. Annual Meeting of GDR-I GNT (Graphene and Nanotubes: science and applications), Coma-ruga, Spain, 19-23 October 2009.
2. T. Szkopek, P. Gaskell, **H. S. Skulason**, and C. Rodenchuk. *Optical Conductivity Measurements of Graphene on Glass*. European Science Foundation, Graphene Week 2009, Obergurgl, Austria, March 2009.
1. **H. S. Skulason** and S. Ingvarsson. *Rafgasorbylgjuofn (e. Microwave Plasma Etcher)*. Presented at the Natural Science Symposium in Reykjavik, March 3rd and 4th 2006.

WORKSHOPS ATTENDED

- *Basic Business Skills for Non-Business Graduate Students*, McGill University **2011**
- *T-PULSE Graduate Teaching Workshop*, McGill University **2009**
- *Workplace Hazardous Materials Information System*, McGill University **2007, 2012**
- *Radio Amateur*, Icelandic Radio Amateurs, issued call sign TF3LX **2005**
- *Project Management*, IEEE Student Branch Iceland **2004**
- *Leadership training*, IEEE Student Branch Iceland **2003**

PROFESSIONAL MEMBERSHIP

- Institute of Electrical and Electronics Engineers (IEEE) **2004 - present**
- IEEE Microwave Theory and Techniques Society (IEEE MTT-S) **2011 - present**

LANGUAGES

English and Icelandic (fluent). French, German and Danish (beginner).