

PhD. SEOK-KYUN SON (Assistant Professor)

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EDUCATION

- 2008 - 2014 **University of Cambridge, UK**
PhD student in Physics (admitted to the degree of PhD on 24 JANUARY 2015)
Thesis: “*Electron transport by Surface Acoustic Waves (SAWs) in an undoped system*”: A Potential Single-Photon Source with a GHz range
- 1999 - 2006 **Pusan National University, Republic of Korea**
BSc in Physics
Honour Student (2003 – 2005)
Ranked as second upon graduation
(Course of study was prolonged to accommodate two years of military service)

RESEARCH

- 2019 – Current **Mokpo National University, Department of Physics, Korea, Republic of**
Assistant professor
- Project: Nanoelectronics with 2D materials**
- Optoelectronics for light emission devices
 - Application of ABC graphite for a band gap engineering
 - Advanced nanofabrication with 2D materials
- 2016 – 2019
- National Graphene Institute, School of Physics and Astronomy, The University of Manchester, UK**
Research associate (Advisor: Dr. Artem Mishchenko and Prof. Kostantin Novoselov, Nobel Prize winner in 2010)
- Project: Electrical and optical characterisation of 2D crystals and van der Waals materials.**
- Optoelectronics for ultrafast light emission devices (graphene light bulb)
 - Basic properties of ABC graphite films
 - Graphene Josephson junctions and other two dimensional superconductors
- 2014 - 2016 Research associate (Advisor: Prof. Cinzia Casiraghi and Prof. Kostantin Novoselov, Nobel Prize winner in 2010)
- Project: Raman spectroscopy for graphene and hexagonal boron nitride (h-BN) heterostructures.**
- Black phosphorus field-effect transistors
 - Emergence of Superlattice Dirac points in graphene aligned with h-BN
 - Monitoring dopants by Raman spectroscopy in an electrostatically back-gated graphene/h-BN transistor
 - Bio compatible 2D crystal Ink-jet printed heterostructures

2008 - 2014 **Semiconductor Physics Group, Cavendish Laboratory, Department of Physics, University of Cambridge, UK**
PhD candidate (Advisor/Supervisor: Prof. Chris Ford)

Project: *Surface acoustic wave (SAW)-driven luminescence from a lateral n-p junction in a GaAs/AlGaAs quantum well*

- Optimization of piezoelectric property for enhanced SAW pumping
- Fabrication of SAW-driven single-electron devices comprising quasi-one-dimensional channels and n-p junctions
- Electrical measurement of SAW devices at 4K and 300mK

TEACHING EXPERIENCE

- 2016 **National Graphene Institute**
Cleanroom assistant
- Experience of training junior PhD students in cleanroom techniques
- 2015 **School of Chemistry, The University of Manchester, UK**
Teaching assistant for CHEM10101 Workshops
- Introduction to the fundamental principles underlying all chemical phenomena
- 2011 – 2014 **Cavendish Laboratory, Department of Physics, University of Cambridge, UK**
Cleanroom assistant
- Experience of training junior PhD students in cleanroom techniques

AWARDS & SCHOLARSHIPS

- 2013 Research fund, Semiconductor Physics Group, Cavendish Laboratory, Department of Physics, University of Cambridge, United Kingdom
- 2013 Research studentship, Parry Dutton Fund
- 2013 Research studentship grant awards, Cambridge Philosophical Society
- 2013 Research student fund, Institute of Physics (IOP)
- 2008-2011 Fully-funded PhD: Scholarship funded by Samyang Moolsan Ltd., in South Korea
- 2003-2005 Academic Excellence Scholarship, Pusan National University

SKILLS

- Languages**
- English (Fluent) and Korean (Native speaker)
- Experimental abilities**
- Full experience of optimization and fabrication of graphene/2D materials, heterostructures and devices
 - Expertise in fabrication of nanoscale semiconductor devices (quantum dot, one-dimensional quantum wire, and two-dimensional system)
 - Transport measurements at low temperature with cryogenic systems
 - Experience of Raman spectroscopy for characterisation of graphene and 2D materials
 - Full experience of scanning probe techniques such as AFM and SEM
 - Expertise in piezoelectric materials (GaAs and ZnO)
 - Established an induced 2DEG system in undoped quantum well

- One-dimensional electron transport by a surface acoustic wave
- Characterization of semiconductor devices using microwaves in general
- Experience of setting up a cryogenic scanning optical microscope in a ^3He (300mK) cryostat for photon detection

REFERENCES

Prof. Chris Ford

Semiconductor Physics
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Prof. Yunchul Chung

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Prof. Konstantin Novoselov

Condensed Matter Physics
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