

# Min GuKang

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## Education

### Pohang University of Science and Technology (POSTECH)

*Pohang, Rep. of Korea*

B.S. IN PHYSICS

*Mar. 2012 - Aug. 2015*

- Graduated first among 300 graduates (Summa Cum Laude, GPA 4.21/4.3)
- Chief Editor of Science Magazine 'POSTECHIAN'
- Member of POSTECH Honor Society, ALPHA
- Member of POSTECH student ambassadors, ALIM

### Korea Science Academy (KSA)

*Busan, Rep. of Korea*

HIGHSCHOOL

*Mar. 2009 - Feb. 2012*

- Summa Cum Laude in Physics (GPA 4.02/4.3)
- Superb Research Award

## Research Career

### Photon Scattering Lab (Prof. Riccardo Comin), Dept. of Phys., MIT

*Cambridge, MA, United States*

PHD CANDIDATES

*Sep. 2016 - current*

- REXS and RIXS studies on High Tc superconductors.
- XMCD and ARPES studies on frustrated system.
- Beamline REXS experiments in Canadian Light Source (Sep. 2016).

### ARPES Laboratory, Center for Artificial Low Dimensional Electronic System, Institute of Basic Science

*Pohang, Rep. of Korea*

VISITING RESEARCHER

*Sep. 2015 - Exp. Jul. 2016*

- Band Gap tuning of 2D materials through surface doping.
- Electron-phonon interaction in 2D materials.
- Beamline ARPES experiments in Pohang Accelerator Laboratory (Oct. 2015), Advanced Light Source (Feb. 2016), and Diamond Light Source (Jun. 2016).

### MPA-CMMS, Los Alamos National Laboratory

*Los Alamos, NM, United States*

VISITING RESEARCHER

*Jul.2014-Sep.2014 & Jan.2015-Feb.2015*

- Measured thermal and transport properties to reveal doping effects on recently found spin triplet superconductor.
- Analyzed physics related to quantum critical point and nature of magnetism and superconductivity.
- Studied physics of heavy fermion system and suggested topics for future MFM experiments.
- Conducted theoretical and experimental discovery of topological insulators through Density Functional Theory and surface transport measurement.

### MFM Laboratory, Center for Artificial Low Dimensional Electronic System, Institute of Basic Science

*Pohang, Rep. of Korea*

UNDERGRADUATE RESEARCHER

*May. 2014 - Jun. 2015*

- Involved in homemade MFM project and designed nanoscale positioner and scanner.
- Designed and built high voltage amplifier.
- Setup commercial Cryogen Free Magnet (CFM) and built compatible resistivity and heat capacity measurement system.
- Built Labview softwares for positioner, high voltage amplifier, and CFM measurement.

### Plasma Physics Projects at POSTECH (P4 Laboratory)

*Pohang, Rep. of Korea*

UNDERGRADUATE STUDENT

*Sep. 2013 - Mar. 2014*

- Simulated plasma electron motion in magnetic and/or electric field using MATLAB.
- Studied modelling methods for edge electron temperature profile.

### Research Experiences in High school

*Busan, Rep. of Korea*

R&E PROGRAM AT KAIST AND GRADUATION THESIS AT KSA

*May. 2010 - Feb. 2012*

- Studied effect of electron beam to efficiency of TiO<sub>2</sub> photocatalyst.
- Revealed importance of size and orientation of crystal in utilizing Electro-Ultrasonic Spectroscopy.

## Publications & Presentations

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### Journal of Physics: Condensed Matter (Cover Image)

*IOP Publishing*

FIRST AUTHOR

*Aug. 2015*

- Mingu Kang, N. Wakeham, Ni Ni, E. Bauer, Jeehoon Kim, and F. Ronning, "Thermal and Transport Properties of  $U_2Pt_{1-x}Ir_xC_2$ "

### POSTECH Graduation Thesis

*POSTECH*

INSTRUMENT SETUP AT MFM LABORATORY

*Jun. 2015*

- Mingu Kang and Jeehoon Kim, "Setup of Low Temperature Measurement System : Transport & Thermal Measurement at 0.3 K"

### 2015 American Physical Society March Meeting

*San Antonio, Texas, United States*

ORAL PRESENTATION IN HEAVY FERMIONS SECTION

*Mar. 2015*

- Min Gu Kang, Nick Wakeham, Ni Ni, Eric Bauer, Jeehoon Kim, and Filip Ronning, "Thermal and Transport Properties of  $U_2Pt_{1-x}Ir_xC_2$ "
- Other involved presentation : Nick Wakeham, Andy Mounce, Ni Ni, Mingu Kang, Sangyun Lee, Roman Movshovich, Jianxin Zhu, Tuson Park, Eric Bauer, Joe Thompson, and Filip Ronning, "Unconventional Superconductivity in  $U_2PtC_2$ "

### 2014 Korean Physical Society Fall Meeting

*Gwangju, Rep. of Korea*

ORAL PRESENTATION IN SUPERCONDUCTIVITY SECTION

*Oct. 2014*

- Min Gu Kang, Nick Wakeham, Ni Ni, Eric Bauer, Filip Ronning, and Jeehoon Kim, "Thermal and Transport Properties of  $U_2Pt_{1-x}Ir_xC_2$ "
- Awarded as Outstanding Oral Presentation

### 6th NDT in Progress

*Prague, Czech Rep.*

ORAL PRESENTATION & CONFERENCE PROCEEDINGS

*Oct. 2011*

- Mingu Kang, Byeung-Eog Jun, and Young H. Kim, "Effect of orientation and size of silicon single crystal to Electro-Ultrasonic Spectroscopy"
- Registered at NDT.net Database

### 2010 Korean Physical Society Fall Meeting

*Changwon, Rep. of Korea*

POSTER PRESENTATION

*Oct. 2010*

- Min Gu Kang, Dong Jin Kim, Do Hun Kim, Jae Ho Sung, and Sung Oh Jho, "Enhancement of water decomposition efficiency of  $TiO_2$  photocatalyst through electron beam irradiation"
- Research & Education Program in Korea Advanced Institute of Science and Technology

## Academic Honors & Scholarships

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### Samsung Scholarship for Study Abroad

*Rep. of Korea*

SCHOLARSHIP, SAMSUNG

*2015*

- Selected as one of 25 recipients in the field of science, engineering, and social science.
- 50,000 dollars/year, 5 year funding.

### Excellence Award, POSTECH Undergraduate Research Program

*Rep. of Korea*

AWARDS, POSTECH

*2014*

- Awarded for excellent research in Professor J. H. Kim's MFM Laboratory.

### Talent Award of Korea

*Rep. of Korea*

HONORS, MINISTRY OF EDUCATION OF KOREA

*2015*

- Selected as future talents of Korea (one of 40 undergraduate recipients).

### Outstanding Oral Presentation Award, 2014 Korea Physical Society Fall Meeting

*Rep. of Korea*

AWARDS, KOREA PHYSICAL SOCIETY

*2014*

- Awarded for excellent research presentation in 2014 Korea Physical Society Fall Meeting

### GE Foundation Scholar-Leaders Award & Scholarship

*International*

SCHOLARSHIPS, GE FOUNDATION, FULBRIGHT, AND INSTITUTE OF INTERNATIONAL EDUCATION

*2013*

- Global Affiliation for Future Leaders in Natural Science and Engineering
- Selected as one of 6 members in Korea

### Presidential Science Scholarship

*Rep. of Korea*

SCHOLARSHIP, MINISTRY OF EDUCATION OF KOREA

*2012*

- Science Scholarship offered under name of president of Korea

## Program for Highly Dedicated Students in POSTECH

Rep. of Korea

SCHOLARSHIP, POSTECH

2012

- Supporting program of POSTECH for one or two extraordinary freshmen students

## Samsung Frontier Membership

Rep. of Korea

HONOR, SAMSUNG ELECTRONICS

2012

- Affiliation for the extraordinary students to support future frontiers of high-end technology.

## Distinction Award, Singapore International Science Challenge

International

AWARD, MINISTRY OF EDUCATION OF SINGAPORE

2011

- Awarded suggesting future solution for global environmental problems. Conferred by the Minister of Education of Singapore.

## Silver Award & Finalist, 9th Korea Young Physics Tournament

Rep. of Korea

AWARD, KOREA FOUNDATION FOR THE ADVANCEMENT OF SCIENCE AND CREATIVITY

2010

- Presenting at the final as the representative of Korea Science Academy team.

## Exchange student & Language Program

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2012 **English Program**, Communication and Culture program, UC Davis Extension

Davis, United States

2011 **Exchange Student**, MINT-EC High school, Germany

Germany

2010 **Summer School**, Deep Summer Academy, University of Toronto

Toronto, Canada

## Extracurricular Activities

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### Science Magazine POSTECHIAN

Pohang, Rep. of Korea

CHIEF EDITOR AT 2013 TO 2014

May. 2012 - Aug. 2014

- Published Science Magazine POSTECHIAN targeting high school students talented in science and technology (Quarterly published, 25000 offline copies per each publication).
- Established four new corners and reformed two corners as Chief Editor to match changes in interests of readers.

### ALIMI, The student ambassadors of POSTECH

Pohang, Rep. of Korea

MEMBER

Mar. 2012 - Jun. 2015

- Planned and carried out summer camp for talented youths.
- Carried out campus tours for important visitors of POSTECH.
- Served as a model for POSTECH publicity pamphlets and homepage.

### ALPHA, POSTECH Honor Society, Voluntary services for Pohang community

Pohang, Rep. of Korea

MEMBER

May. 2013 - Dec. 2014

- Served and raised contributions for local orphanage.
- Delivered charcoal briquettes to poor, vulnerable citizens.

### Child Fund of Korea

Seoul, Rep. of Korea

SPONSOR

Jan. 2010 - Present

- Have sponsored child fund of Korea monthly to help unprivileged children.

## Teaching

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### POSTECH Freshmen Mentoring Program

Pohang, Rep. of Korea

MENTOR

Mar. 2014 - Aug. 2015

- Mentored team of freshmen students.
- Taught General Physics I, II for 3 semesters.

### POSTECH Physics Department Major Subject Mentoring Program

Pohang, Rep. of Korea

MENTOR

Mar. 2014 - Aug. 2015

- Served as mentor in Electromagnetism I, II for 3 semesters.

### Pocheol high school Mentoring program.

Pohang, Rep. of Korea

VOLUNTARY TEACHER

Mar. 2013 - Aug. 2013

- Served as voluntary teacher of math and physics for unprivileged high school students.

