

Seung-Jin Oh

+82-10-2756-0284 · ohsj0601@gmail.com

14-2, Gobigogae-ro, Ganghwa-eup, Ganghwa-eup, Incheon, Republic of Korea

Education

Master of Science, Chung-Ang University, Seoul, Korea **2016 — 2018**

- Major in Inorganic chemistry (Advisor: Prof. Kang Min Ok)
- Thesis: Synthesis and Characterization of Noncentrosymmetric $\text{NaLa}(\text{IO}_3)_4\text{:Ln}^{3+}$ (Ln = Sm and Eu) and a Novel Metastable $\text{Li}_2\text{Mo}_3\text{TeO}_{12}$
- GPA: 4.50/4.50 (Credits: 32)

Bachelor of Science, Chung-Ang University, Seoul, Korea **2009 — 2016**

- Military service, Korea Army **2012 — 2013**
- Major: Chemistry / Minor: Physics
- GPA: 4.05/4.50 (Credits: 170), Graduated magna cum laude

Research Interests

Structure-Property relationship; Crystal Structure; Energy conversion; Synthesis; Functionalized materials

Research Experience

Graduate Research Assistant, (Prof. Kang Min Ok) **2016 — 2018**

Project: Development of functional Noncentrosymmetric (NCS) framework materials

- Designed novel nonlinear optical (NLO) materials and introduced photoluminescence properties using lanthanide cations.
- Categorized and elucidate the structure-property relationships for a series of NCS solid solutions.

Project: Brain Korea 21, Intelligent Nano-bio molecular sensing team

- Synthesized functional inorganic compounds

Internship, Inorganic Chemistry Laboratory (ICL). (Prof. Kang Min Ok) **2010 — 2012 & 2015**

- Elucidate the effect of second-order Jahn-Teller (SOJT) for lone-pair cations and d^0 transition metal cations on the framework, especially on centrality.

Environmental Measurement & Analysis for University Student, Ministry of Environment, Korea. **Summer 2011**

- Enlightenment ability of measurement and analysis of UV-vis, GC, and AAS.

Research and Experiments in Basic Chemistry **Spring 2010**

- Synthesized solid-state materials using calcinations and hydrothermal methods.

Publications

Patent

1. K. M. Ok, M. Lü, H. Jo, S.-J. Oh. (Chung-Ang University, Korea). Lithium Metal Tellurite and Lithium Ion Cell Comprising Lithium Metal Tellurite. Korean Patent 10-1851895, April, 18, 2018.

First Author

6. S.-J. Oh, S.-J. Lim, T.-S. You, K. M. Ok, "From a Metastable Layer to a Stable Ring: A Kinetic Study for Transformation Reactions of $\text{Li}_2\text{Mo}_3\text{TeO}_{12}$ to Polyoxometalates", *Chem. Eur. J.*, **2018**, *24*, 6712 (Front Cover, VIP Paper).
5. H. Jo, [†] S.-J. Oh, [†] K. M. Ok, "Noncentrosymmetric (NCS) solid-solutions: elucidating structure-nonlinear optical (NLO) property relationship and beyond", *Dalton Trans.*, **2017**, *46*, 15628. ([†] Co-first authors)
4. S.-J. Oh, H. G. Kim, H. Jo, T. G. Lim, J. S. Yoo, K. M. Ok, "Photoconversion Mechanisms and the Origin of Second-Harmonic Generation in Metal Iodates with Wide Transparency, $\text{NaLn}(\text{IO}_3)_4$ (Ln = La, Ce, Sm, and Eu) and $\text{NaLa}(\text{IO}_3)_4 \cdot \text{Ln}^{3+}$ (Ln = Sm and Eu)", *Inorg. Chem.*, **2017**, *56*, 6973.
3. S.-J. Oh, Y. Shin, T. T. Tran, D. W. Lee, A. Yoon, P. S. Halasyamani, K. M. Ok, "Structure-Property Relationships in Solid Solutions of Noncentrosymmetric Aurivillius Phases, $\text{Bi}_{4-x}\text{La}_x\text{Ti}_3\text{O}_{12}$ ($x = 0-0.75$)", *Inorg. Chem.*, **2012**, *51*, 10402.
2. S.-J. Oh, D. W. Lee, K. M. Ok, "Influence of Cation Size on the Framework Structures and Space Group Centricities in $\text{AMo}_2\text{O}_5(\text{SeO}_3)_2$ (A = Sr, Pb, and Ba)", *Inorg. Chem.*, **2012**, *51*, 5393.
1. S.-J. Oh, D. W. Lee, K. M. Ok, "PbMSeO₆ (M = Mo and W): New quaternary mixed metal selenites with asymmetric cationic coordination environments", *Dalton Trans.*, **2012**, *41*, 2995.

Co-author

9. T. H. Moon, S.-J. Oh, K. M. Ok, "[((R)-C₈H₁₂N)₄Bi₂Br₁₀] and [((S)-C₈H₁₂N)₄Bi₂Br₁₀]: First Chiral Hybrid Bismuth Bromides Templated by Chiral Organic Cations", *In progress*.
8. B. Ahmed, H. Jo, S.-J. Oh, K. M. Ok, "Variable Asymmetric Chains in Transition Metal Oxyfluorides: Structure-Second-Harmonic Generation Property Relationships", *Inorg. Chem.*, **2018**, *57*, 6702.
7. H.-X. Qi, H. Jo, S.-J. Oh, K. M. Ok, "Synthesis, second-harmonic generation (SHG), and photoluminescence (PL) properties of noncentrosymmetric bismuth selenite solid solutions, $\text{Bi}_{2-x}\text{Ln}_x\text{SeO}_5$ (Ln = La and Eu; $x = 0-0.3$)", *Solid State Sci.*, **2018**, *76*, 105.
6. M. Lü, H. Jo, S.-J. Oh, K. M. Ok, "New quaternary alkali metal cadmium selenites, $\text{A}_2\text{Cd}(\text{SeO}_3)_2$ (A = K, Rb, and Cs) and $\text{Li}_2\text{Cd}_3(\text{SeO}_3)_4$ ", *J. Solid State Chem.*, **2017**, *256*, 213.
5. H. Jung, H. Jo, S.-J. Oh, K. M. Ok, "Synthesis, second-harmonic generations (SHG), and photoluminescence (PL) properties of $\text{Ca}_4\text{Bi}_{6-x}\text{Ln}_x\text{O}_{13}$ (Ln = La and Eu) solid solutions", *J. Solid State Chem.*, **2017**, *252*, 28.
4. M. Lü, H. Jo, S.-J. Oh, S. Lee, K.-Y. Choi, Y. Yu, K. M. Ok, "Syntheses, Structures, and Characterization of Quaternary Tellurites, $\text{Li}_3\text{MTe}_4\text{O}_{11}$ (M = Al, Ga, and Fe)", *Inorg. Chem.*, **2017**, *56*, 5873.
3. M. Lü, H. Jo, S.-J. Oh, K. M. Ok, "Variable dimensionality and framework found in a series of quaternary zinc selenites, $\text{A}_2\text{Zn}_3(\text{SeO}_3)_4 \cdot x\text{H}_2\text{O}$ (A = Na, Rb, and Cs; $0 \leq x \leq 1$) and $\text{Cs}_2\text{Zn}_2(\text{SeO}_3)_3 \cdot 2\text{H}_2\text{O}$ ", *J. Solid State Chem.*, **2017**, *245*, 1.
2. B. Kim, S.-J. Oh, H. Jo, K. M. Ok, "A Polar Titanium–Organic Chain with a Very Large Second-Harmonic-Generation Response", *Inorg. Chem.*, **2016**, *55*, 11635.
1. D. W. Lee, S.-J. Oh, P. S. Halasyamani, K. M. Ok, "New Quaternary Tellurite and Selenite: Synthesis, Structure, and Characterization of Centrosymmetric InVTe_2O_8 and Noncentrosymmetric InVSe_2O_8 ", *Inorg. Chem.*, **2011**, *50*, 4473.

Conference Presentation

Oral Presentation

- **2016 KCS Inorganic Chemistry Division Summer Symposium** **Summer 2016**
S.-J. Oh, H. Y. Jung, J. J. Kim, J. H. So, E. J. Cho, K. M. Ok, "Crystal Growth, Structure, Determination and Characterization of an Organic-Inorganic Hybrid 1D-Chain Compound, (*i*-Pr)₂NH₂PbBr₃", Busan, Korea.

Poster Presentation

- **120th KCS General Meeting & Exposition** **Fall 2017**
S.-J. Oh, T. Moon, H. Lee, J. Y. Hwang, K. M. Ok, "[C₆H₅CH₂NH₃]₃BiCl₆·0.5H₂O: Photoluminescence Properties of a Red-emitting One-dimensional Organic Bismuth Halide", INOR.P-144, Gwangju, Korea.
- **254th ACS National Meeting & Exposition** **Fall 2017**
S.-J. Oh, K. M. Ok, "From a Layer to a Ring: A Kinetic Study for the Ion-Exchange Reactions of a New Tellurite, Li₂Mo₃TeO₁₂ Using the Powder X-ray Diffraction", INOR-550, Washington, DC, USA.
- **17th Korea-Japan Joint Symposium on Organometallic and Coordination Chemistry** **Fall 2016**
S.-J. Oh, H. G. Kim, K. M. Ok, "Photoluminescence Properties of Sm³⁺- and Eu³⁺-doped Noncentrosymmetric Iodates, NaLa_{1-x}Ln_x(IO₃)₄ (Ln = Sm and Eu)", P08, Busan, Korea.
- **118th KCS General Meeting & Exposition** **Fall 2016**
S.-J. Oh, H. G. Kim, K. M. Ok, "Optical Properties for New Noncentrosymmetric Sodium Lanthanide Iodates, NaLn(IO₃)₄ (Ln = La, Ce, Sm, and Eu)", INOR.P-144, Busan, Korea.

Teaching and Mentoring Experience

Graduate Mentor, Chemistry, Chung-Ang University **2016 — 2018**

- *University for Creative Korea: Creative Human Resource Development Center of Advanced Chemistry* 2017 — 2018
 - Take role of mentor for three undergraduate students in synthesis and characterization of solid state inorganic compounds
- *Practical Education: Chung-Ang University Undergraduate Research Opportunities Program* 2016 — 2017
 - Guided four undergraduate students in preparation and synthesis of the oxide compounds

Teaching Assistant, Inorganic and Catalytic Chemistry **Spring 2017**

- Instructed problem-solving lecture to undergraduate students

Teaching Assistant, General Chemistry Laboratory I **Spring 2016 & Spring 2017**

- Instructed experimental lecture and practice of general chemistry

Teaching Assistant, Inorganic Chemistry Laboratory **Fall 2016**

High school trainee teacher (Chemistry) **Spring 2015**

- Instructed high-school chemistry and mathematics lecture to high school students

License and Certificate

Engineer Chemical Analysis

2016

- Analyze, measure and evaluate the chemical composition and content

Teacher's certificate (Chemistry)

February 2016

- Certificate for teaching secondary school students

Scholarships

CAU Graduate Research Scholars	2016 — 2017
Department Secondary Honor Scholarship	2009 — 2012
Government Scholarship (Ministry of Education)	2011
Chung-Ang Love Scholarship	5 Semesters

Technical Skills

Computer:

- **Graph and Document:** Origin and Microsoft Office(Word, Excel).
 - *Data analysis and graphing work*
- **Graphic:** CorelDRAW, PowerPoint, and Flash.
 - *Illustrate the molecular and crystal structure of the compounds and construct figures to present the data*
- **Crystallographic:** SHELX (SHELXT, SHELXTL, SHELXS, SHELXL), PCW, Diamond, Ortep3, Powder4, Mercury, WinGX, X'pert HighScore, PCW, and GSAS.
 - *Solve the crystal structure from single crystal X-ray diffractions (SCXRD) and refine the crystal structure using Rietveld refinement*
- **Calculation:** Quantum ESPRESSO, Gaussian09, and CrystalExplorer.
 - *Calculate Hirshfeld surface using CrystalExplorer*
 - *Optimize and calculate the energy state for molecular compounds and solid structure.*

Instruments:

- **Management:**
 - Infrared Spectrometer, Glove Box / Glove Bag, Thermogravimetric Analyzer, Second-Harmonic Generation measurements using solid-state laser, Vacuum line, Hume hood
- **Directly Used:**
 - Electric furnace / tube-furnace, Powder X-ray Diffractometer, Single Crystal X-ray Diffractometer, UV-vis Spectrometer, Photoluminescence (PL) Spectrometer, Fluorescence (FL) Spectrometer, Scanning Electron Microscopy (SEM) /Energy Dispersive Analysis X-ray (EDAX), Brunauer, Emmet and Teller (BET) Instrument, Synchrotron SCXRD