

Seungwoo Kim

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EDUCATION

Mar. 2018 ~ Aug. 2023	Seoul National University Department of Materials Science and Engineering Thesis: Evaluation of Calibration Accuracy for Internalized Digital Image Correlation (DIC) Equipment <i>Advisor: Keehoon Kang</i> <i>B.S. in Materials Science and Engineering</i> GPA: 3.68 / 4.3 <i>Cum Laude</i>	Seoul, Korea
Sep. 2023 ~ Present	Seoul National University Department of Materials Science and Engineering <i>Advisor: Myoung-Gyu Lee</i> <i>Ph.D. Student</i> GPA: 3.82 / 4.3	Seoul, Korea

RESEARCH INTERESTS

- Computational mechanics
- Anisotropic plasticity
- Fracture mechanics
- Constitutive modeling
- Finite element analysis

PUBLICATIONS (SCI)

1. Seonghwan Choi, Seungwoo Kim, Soo-Chang Kang, Myoung-Gyu Lee, "Distortional hardening revisited: Advanced strength prediction model after multi-directional forming", *INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES*, (2025)
2. Seungwoo Kim, Kyung Mun Min, Jee Hyuk Ahn, Soo-Chang Kang, Myoung-Gyu Lee, Seonghwan Choi, "Non-monotonic loading and thermal aging effects on the complex flow behavior of X52 and X56 steels", *MATERIALS & DESIGN*, (2026)

PUBLICATIONS (DOMESTIC)

1. 김승우, 최성환, 강수창, 이명규, "왜곡경화 모델을 적용한 조관 공정 모사 성형 후 인장 강도 예측", 한국소성·가공학회 2024년도 춘계학술대회, (2024)
2. 김승우, 최성환, 강수창, 이명규, "다축 성형 공정 후 고온 강도 예측을 위한 미세구조 기반 왜곡경화 모델", 한국소성·가공학회 2026년도 춘계학술대회, (2026)

CONFERENCES

1. Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, Myoung-Gyu Lee, "Prediction of tensile strength after multi-axial pipe forming processes using distortional hardening model", Korean Society for Technology of Plasticity and Materials Processing, Seoul, Korea (Mar. 2024) - Conference paper
2. Seungwoo Kim, Jehyun You, Myoung-Gyu Lee, "Computational Materials Simulations via Abaqus User Material Subroutines", SIMULIA Regional User Meeting Korea 2024, Seoul, Korea (Jun. 2024) - Poster
3. Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, Myoung-Gyu Lee, "Distortional hardening based yield strength prediction after industrial steel pipe forming process", The 19th SNU-TU-UT Student Workshop Program, Seoul, Korea (Oct. 2024) - Oral
4. Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, Myoung-Gyu Lee, "A Novel Distortional Hardening Model for Predicting the Strength of Steel Pipes Under Elevated Temperatures and Complex Deformations", Korean Institute of Metals and Materials, Jeju, Korea (Apr. 2025) - Oral
5. Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, Myoung-Gyu Lee, "Novel Distortional Hardening Based Strength Prediction of API Line Pipes at Elevated-Temperature", 44th International Conference on Ocean, Offshore & Arctic Engineering, Vancouver, Canada (Jun. 2025) - Oral
6. Myoung-Gyu Lee, Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, "A Microstructure-based Distortional Hardening Model for Metal Forming at Elevated Temperature", The 13th International Conference and Workshop on Numerical Simulation of 3D Sheet Metal Forming Processes, Munich, Germany (Jul. 2025) - Oral
7. Seungwoo Kim, Seonghwan Choi, Myoung-Gyu Lee, "Microstructure based Distortional Hardening Model for Elevated Temperature Strength Prediction", The 20th SNU-TU-UT Student Workshop Program, Tokyo, Japan (Oct. 2025) - Oral
8. Myoung-Gyu Lee, Seungwoo Kim, Seonghwan Choi, "Modeling of Anisotropic Hardening at the Meso- and Macro- Scale", 2026 TMS Annual Meeting & Exhibition, San Diego, United States (Mar. 2026) - Oral
9. Seungwoo Kim, Seonghwan Choi, Soo-Chang Kang, Myoung-Gyu Lee, "A Distortional Hardening Model for Temperature-Dependent Plasticity in Complex Metal Forming", Korean Society for Technology of Plasticity and Materials Processing, Seoul, Korea (Apr. 2026) - Conference paper

RESEARCH EXPERIENCES

- Research Intern at High Temperature Thermochemistry Laboratory, Department of Materials Science and Engineering, Seoul National University, Korea (Jul. 2019 ~ Aug. 2019) / Thermodynamic Modeling of Alkali-Arsenates
- Researcher at Materials Mechanics Laboratory, Department of Materials Science and Engineering, Seoul National University, Korea (Jul. 2023 ~ Present)

AWARDS AND HONORS

- Jinhap academic award (진합학술상), Korean Society for Technology of Plasticity and Materials Processing, Korea (Mar. 2024)

PROJECTS

- Development of numerical material model for predicting total elongation of API proportional specimen in response to ISO 3183 revision, POSCO, Korea / Principal Researcher (Aug. 2023 ~ Jul. 2024)
- Development of numerical material model for predicting high temperature strength of API steel pipe in response to IOGP revision, POSCO, Korea / Principal Researcher (Aug. 2024 ~ Jul. 2025)
- Development of an automatic parameter identification framework for pipe-forming simulation, POSCO, Korea / Principal Researcher (Dec. 2025 ~ Feb. 2026)
- Development of material characterization methods and a nonlinear anisotropic plasticity model for battery can materials, LG Energy Solution, Korea / Principal Researcher (Mar. 2025 ~ Apr. 2026)
- 금속소재 조성·공정 자동설계 초거대 AI 서비스 개발, Korea institute of Materials Science (KIMS), Korea / Principal Researcher (Mar. 2026 ~ Present)
- Establishing a Ceramic Heat-Dissipation Materials Hub for Advanced Mobility based on a Data-Driven Closed-Loop System, Seoul National University, Korea / Principal Researcher (Apr. 2026 ~ Present)

SKILLS AND TECHNIQUES

- Software: ABAQUS commercial finite element analysis
- Programming: Fortran, Matlab, Python
- Equipments: Universal test machine (Instron), Digital image correlation (VIC 3D, ARAMIS)