

Woncheol Jeong, Ph.D.

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Objective

A Professor Position

Education

- | | | |
|-------------------------|---|-----------------------|
| Sep. 2012~
Feb. 2017 | Seoul National University (SNU) <ul style="list-style-type: none">• PhD in Materials Science and Engineering(MSE)• Thesis advisor: Prof. Kwansoo Chung (Late Professor of MSE at SNU)• Specialty: Plasticity, Viscoelasticity, Elasticity• Thesis title: Stress and Strain Analysis of Rotating Annular Disks Obeying a Pressure-Dependent Yield Criterion• Funded by National Research Fund(BK 21 PLUS) | Seoul, Korea |
| Sep. 2001~
Feb. 2005 | Massachusetts Institute of Technology (MIT) <ul style="list-style-type: none">• M.S. in Mechanical and Biological Engineering• Thesis advisor: Prof. Roger D. Kamm• Specialty: Biomechanics, Bimolecular Engineering, Tissue Engineering• Thesis title: Studies of the Microstructure of Self-Assembling Peptides• Funded by National Science Foundation(NSF) | Cambridge, USA |
| Mar. 1999~
Aug. 2001 | Seoul National University <ul style="list-style-type: none">• M.S. in Materials Science and Engineering• Specialty: Solid Mechanics, Viscoelasticity• Thesis title: Large Deformation of Uniform Helical Spring• Member of National Research Lab and funded by National Research Fund(BK 21) | Seoul, Korea |
| Mar. 1993~
Feb. 1999 | Seoul National University <ul style="list-style-type: none">• B.S. in Fiber and Polymer Science• Ranked the top out of the department class (<i>Summa Cum Laude</i>)• Four-year full scholarship | Seoul, Korea |

Professional Experience

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|-------------------------|---|----------------------------------|
| Sep. 2021~
Present | University of Seoul
Lecturer of Department of Advanced Materials, College of Engineering <ul style="list-style-type: none">• Taught undergraduate students physical chemistry | Seoul, Korea |
| Sep. 2019~
Sep. 2020 | Far Eastern Federal University (FEFU)
Full-Time Associate Professor of Department of Welding Technology, College of Engineering, Polytechnic Institute <ul style="list-style-type: none">• Made models of segregation for glass-steel composites based on the Fick's 2nd law, mass balance and Hall-Petch slope. Proposed ideas to analyze the interface structure of the glass-steel composite• Setup classes of 'physical fundamental of strength' including fundamental physics of strength, solid mechanics (elasticity), viscoelasticity, plasticity, and fracture mechanics. Provided teaching materials for laboratory practical and studies | Vladivostok, Russia |
| Oct. 2018~
Apr. 2019 | Ton Duc Thang University (TDTU)
Full-Time Researcher of Division of Computational Mathematics and Engineering, Institute for Computational Science, and Faculty of Civil Engineering <ul style="list-style-type: none">• Modelled a ring rolling system based on the slab method theory assuming non-constant shear friction. Solved the problem with numerical techniques and finite element methods• Explored deformation of materials utilizing computational mechanics, especially smoothed finite | Ho Chi Minh City, Vietnam |

element method(SFEM), Fracture mechanics(X-FEM, eXtended SFEM), non-linear analysis, and interaction in Multiphysics environment

Apr. 2018~
Jun. 2018

Beijing University of Aeronautics & Astronautics (Beihang Univ.) **Beijing, China**
Visiting Research Professor at School of Mechanical Engineering and Automation

- Researched the elastic/plastic stress and strain distributions in conjunction with Hill's quadratic orthotropic yield criterion and its associated flow rule revealing the effect of plastic anisotropy on their distributions. Furnished the advantage of semi-analytic solutions compared with finite difference method and dealt with the theoretical research of anisotropic disk in the status of symmetry

Sep. 2012~
Feb. 2017

Seoul National University **Seoul, Korea**
Research Assistant of Materials Mechanics Group

- Provided solutions to stresses and strains of a thick-walled tube under internal and succeeding unloading with the yielding criterion of Tresca and its associated flow rule and proved the kinematic law's effect on the solution validness. Executed the provision of a benchmark problem for thick tubes under autofrettage treatments and testified the precision of numerical solutions compared with analytical solutions having the bi-linear hardening model
- Modeled a rotating annular disk's yielding with the Drucker-Prager yield criterion and elastic/plastic theory, devised numerical methods to analyze the rotating disk expansion, and predicted the influences of parameters on the disk's stresses and strains: disclosed the plastic yielding's dependence on pressure that is many metals property and has grave consequences on the stress and strain profiles in thin discs
- Supplied an efficient way for finding steady planar ideal flows of anisotropic materials utilizing mapping between coordinate systems on the basis of the method of characteristics, establishing the application for ideal forming processes which suggest process design guidelines and ultimate optimum process information for processes of future
- Reviewed 'Basics of Continuum Plasticity' written by Prof. Kwansoo Chung, revising and complementing its contents for publication to be used as a textbook for graduate students
- Developed the method of characteristics which is a useful tool in finding out analytical and numerical solutions to ordinary or partial differential equations
- Researched the numerical method and finite element analysis taking advantage of numerical codes of MATHEMATICA and ABAQUS

Nov. 2011~
May 2017

Korea Strategic Trade Institute (KOSTI) **Seoul, Korea**
Senior Researcher

- Led classification of more than 20,000 export applications including Iran and North Korea based on the control lists of CWC, BWC, AG, WA, MTCR and NSG, and analyzed their trend and the results of export license from 2009 to 2017 feeding the analyses into upgrading Korean strategic trade systems based on the statistical approach
- Contributed to establishing reasonable and systematic control lists of AG, WA, MTCR, and NSG by suggesting Korean proposals, examining other countries' proposals and providing the technical reviews and opinions on the basis of classification experience and technological knowledge regarding materials, chemical, mechanical, and biological engineering
- Successfully held and managed the Korea-USA Commodity Identification Training(CIT) in 2011 improving Police Officers' proficiency of identifying strategic items of Export Control Regimes(AG, WA, MTCR, NSG) as the project manager
- Developed the consulting program to prevent illegal export by conducting consultations of export control and its control lists for companies and raising their awareness of export control
- Joined an outreach and education program of YESTRADE system for Thai public officers as a lecturer of Korea Export Control System. Achieved the provision of system foundation
- Published 'Guidelines AG and WA' to share information, and researched trade of countries of concern to prevent illegal export utilizing information on papers of Export Control Regimes

Mar. 2010~
Jun. 2011

Deloitte **Seoul, Korea**
Senior Consultant

- Led client teams of the Korean Government to improve initiatives and develop long-term strategic roadmap addressing the national technology development
- Defined a methodology to analyze developmental features of technology, which resulted in generating quantification of its levels for standard optimization

- Sep. 2001~
Feb. 2005 **Massachusetts Institute of Technology** **Cambridge, USA**
Research/Teaching Assistant of Biomechanics Group
- Developed new scaffolds comprised of self-assembling peptides and characterized their material property for tissue engineering application
 - Set up a laboratory for the undergraduate class of bio instruments initiating students into the basic operating skills
- Mar. 1999~
Aug. 2001 **Seoul National University** **Seoul, Korea**
Research/Teaching Assistant of Materials Mechanics Group
- Performed numerical analysis using MATLAB-Coding founded on the fundamental science principles for simulating deformation of chassis
 - Assisted in teaching Engineering Mathematics and Solid Mechanics to undergraduate students
- Sep. 1994~
Mar. 1996 **Republic of Korea Army** **Kyeonggi-do, Korea**
Full-time administrative soldier
- Mapped out a battalion's operation plans of defending itself against chemical, biological and radiological(CBR) attack of North Korea and of constructing military encampments
 - Established training and educating programs to provide how to cope with CBR attacks of North Korea

Publications

1. Jeong W., 2021, "Fields of Stresses of FGM Hyperbolic Disks Subjected to Inner Pressure", (manuscript completed).
2. Jeong W., 2021, "Analysis of Stresses and Residual Stresses in Rotating Disks of Functionally Graded Material", (manuscript completed).
3. Jeong W., Alexandrov S., and Lang L., 2018, "Effect of Plastic Anisotropy of the Distribution of Residual Stresses and Strains in Rotating Annular Disks", *Symmetry-Basel* 10:420. (doi:10.3390/sym10090420)
4. Alexandrov S., and Jeong W., 2017, "A Method of Analysis for Planar Ideal Plastic Flows of Anisotropic Materials", *Acta Mechanica* 228(11):3839-3846.
5. Alexandrov S., Chung K., and Jeong W., 2018, "Stress and Strain Fields in Rotating Elastic/Plastic Annular Disks of Pressure-Dependent Material", *Mechanics Based Design of Structures and Machines* 46(3):318-332.
6. Jeong W., and Chung K., 2016, "Stress Analysis of Rotating Annular Hyperbolic Discs Obeying a Pressure-Dependent Yield Criterion", *Structural Engineering and Mechanics* 58(4):689-705.
7. Alexandrov S., Jeong W., and Chung K., 2015, "Descriptions of Reversed Yielding in Internally Pressurized Tubes", *ASME Journal of Pressure Vessel Technology* 138(1):011204.
8. Jeong W., and Kamm R., 2005, "Studies of the Microstructure of Self-Assembling Peptides", MIT.
9. Jeong W., and Chung K., 2001, "Large Deformation of Uniform Helical Spring", SNU.
10. Jeong W., 2014, "Guideline on Australia Group", KOSTI.
11. Jeong W., 2014, "Guideline on Wassenaar Arrangement", KOSTI.

Awards

- Feb. 1999 **Best Award of SNU** **Seoul, Korea**
- Won the best award for the best academic performance in Fiber and Polymer Science Department with the 1st grade out of 32 students (*Summa Cum Laude*)

Fellowships

- 27th Dec. 2017 **The 2018 Albert Nelson Marquis Award** **New Jersey, USA**
- Nominated as a biographical candidate to represent Korea in the 2018 Who's Who in the World®- *the best-known, most trusted biographical resource on the World's most accomplished individuals since 1898*

Scholarships

Spring 1993~
Fall 1999 **Full Scholarship of SNU** **Seoul, Korea**
• Awarded the full scholarship during four academic years for the best performance

Academic Services

Jul. 2018~
Dec. 2019 **Insight - Mechanics** **Republic of Singapore**
Editorial Board Member

Aug. 2018~
Dec. 2019 **Region-Research Journal of Mechanical Engineering(RRJME)** **Tustin, CA, USA**
Editorial Board Member

Memberships

Jul. 2014~
Jun. 2015 **American Society of Mechanical Engineering (ASME) Member** **New York, USA**

Mar. 2005~
Present **Member of MIT Alumni Association** **Seoul, Korea**

Mar. 1999~
Present **Member of SNU Engineering Reunion** **Seoul, Korea**

Teaching Experience

Sep.2021~
Present **Lecturer** **Seoul, Korea**
• Taught a subject(physical chemistry) to undergraduate students

Jan. 2007~
Dec. 2009 **Teacher and Mentor at private academies** **Seoul, Korea**
• Taught mathematics and sciences to high school students and mentored their future career

Spring 2004 **Teaching Assistant at MIT** **Cambridge, USA**
• Trained undergraduate students for the basic operating skills of bio instruments installing a laboratory of the undergraduate class

Spring 2000~
Fall 2000 **Teaching Assistant at SNU** **Seoul, Korea**
• Instructed undergraduate students in solid mechanics and engineering mathematics assisting Prof. Kwansoo Chung

Mar. 1993~
Aug. 2001 **Teacher and Mentor at private academies** **Seoul, Korea**
• Taught mathematics and sciences to high school students and mentored their future career

Invited Seminars/Symposiums

28th Jan.~
1st Feb. 2019 **Department of Welding at Far Eastern Federal University (FEFU)** **Vladivostok, Russia**
(Seminar and Interview)
• Was offered a position of assistant professor by FEFU and expected to go to FEFU in Sep 2019

19~20th Dec. 2017 **Department of Mechanical Engineering at Ulsan University (Seminar)** **Ulsan, Korea**

16th Nov. 2017 **School of General Engineering at Beihang University (Talk)** **Beijing, China**

27th Aug. 2015 **World Congress on Structural Engineering and Mechanics (Symposium)** **Incheon, Korea**

Extra Curricular Activities

Mar. 2009~
Mar. 2010 **English FreeTalking Club** **Seoul, Korea**
Manager
• Generated talking schedules for members manually every week, and booked places for presentation practice setting equipment

- Worked on positive lines improving English proficiency
- Aug. 1993~
Aug. 1994
- Yongmun High School Alumni - SNU Students Reunion** **Seoul, Korea**
President
- Trained a soccer team of alumni members, participated in SNU soccer competition, and won the medal and the fair play award
 - Supplied orphans with regular support of teaching, mentoring and guiding to help making their future career plan
 - Challenged climbing high mountains like Seol-Ak, Jiri and Hala with members and reached the top of mountains
- Sep. 1993~
Aug. 1994
- Association of Women's Studies(Joint Club of SNU-Ewha Womans Univ.)** **Seoul, Korea**
Vice President
- Investigated the role of women and identified their contributions to human accomplishments learning to understand women's experiences through the lens of gender and sexual orientation
 - Explored historical and contemporary aspects of women's oppression and resistance: moved away from the discriminatory language of sex and developed the initiatives for equality and social justice
- Mar. 1993~
Aug. 1994
- Yongkwangro(Joint Club of SNU-Ewha Womans Univ. meaning 'furnace')** **Seoul, Korea**
Member
- Learned how to play guitar and enjoyed performance of guitar to bring joy to people through music

Skills and Other Information

- Languages
- Advanced proficiency in English (Verbal 700, Quantitative 800, Writing 2.5 in GRE)
 - A level 2 certificate for Chinese character
- Computer Skills
- Proficient in programming languages and applications including: MATHEMATICA, MATLAB, ANSYS, ABAQUS, Windows, DOS, Visio
 - Extensive Knowledge of MS-Office (Word, Excel, PowerPoint)
- Volunteering
- Volunteered to help farmers and rural communities in Summer 1993 and 1994
 - Volunteered to take care of the aged with stroke and dementia, and homeless people with diseases at hospitals making use of weekend since 2010
- Hobby
- Meditation, Photography, Climbing
 - A certificate for qualification of Taekwondo (the Korean art of self-defense)