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□ EDUCATION:

- Ph.D. Inorganic Materials Eng., Seoul National University, Korea, 1991-1994.
- M.S. Inorganic Materials Eng., Seoul National University, Korea, 1989-1991.
- B.S. Inorganic Materials Eng., Seoul National Univ. Korea, 1985-1989.

□ PROFESSIONAL EXPERIENCE:

- Professor, Chonnam National University, Jul. 2006-present
- Co-organizer, SSI-22, PyeongChang, Korea 2019
- Editorial Board, Journal of the Korean Ceramic Society, Jan. 2007-present (Editor since 2018)
- Associate Editor, Journal of Asian Ceramic Societies, 2018-present
- Editorial Board, Applied Sciences, MDPI, 2018-present
- Guest Associate Editor for the ISE 2007 Special Issue of the Journal of Electroceramics, 2007-2008
- Staff Scientist at *Max Planck Institute for Solid State Research*, Stuttgart, Germany Nov. 2002-Jun. 2006.
- Editorial Board, Journal *Solid State Ionics*, Aug. 2005-Apr. 2006
- Guest Scientist at *National Institute of Standards and Technology*, Gaithersburg, MD. USA, Nov. 2000-Oct. 2002
- Research Associate at *Creative Research Center for Microstructure Science of Materials*, Seoul National University, Seoul, Korea, May 1998-Oct 2000.
- Guest Scientist at *Max Planck Institute for Solid State Research*, Stuttgart, Germany, Nov. 1995-Apr. 1998. (Humboldt foundation fellowship Nov. 1995-Sept 1997)
- Postdoctoral researcher at Korea Institute of Science and Technology, Seoul, Korea, Jan 1995-Oct. 1995.
- Postdoctoral researcher at Center for Advanced Materials Research, Seoul National University, Seoul, Korea, Mar. 1994-Dec. 1994.

□ AWARDS:

- Edward C. Henry Best Paper Award, Electronics Division of the American Ceramic Society, 2005
- Alexander von Humboldt Foundation Fellowship, 1995

□ RESEARCH INTEREST:

- Electrical (conducting and dielectric) properties of electroceramics: solid electrolytes, semiconductors, and mixed conductors, dielectrics, ferroelectrics
- Impedance spectroscopy for energy and electronic applications
- Surface/grain-boundary effects in electroceramics
- Interface thermodynamics and kinetics
- Interface structure – property relationship
- Nanoscale effects in solid state ionics
- High-temperature versus low-temperature defect chemistry
- Application of electroceramics: solid oxide fuel cells, Li-ion batteries, ceramic sensors, catalysis, photoelectrochemical cells, solar cells, ceramic capacitors, ferroelectric devices

□ **SELECTED PUBLICATIONS**

Full list can be found at <https://scholar.google.com/citations?hl=en&user=Q2bml1oAAAAJ>

- H. Seo, K. Jin, S. Park, K. H. Cho, H. Ha, K.-G. Lee, Y. H. Lee, D. T. Nguyen, H. Randriamahazaka, J.-S. Lee, K. T. Nam, **Mechanistic Investigation with Kinetic Parameters on Water Oxidation Catalyzed by Manganese Oxide Nanoparticle Film**, ACS Sustainable Chem. Eng. 7 10595-10604 (2019) DOI: 10.1021/acssuschemeng.9b01159
- J. Moon, H. Cho, M.-J. Maeng, K. Choi, D. T. Nguyen, J.-H. Han, J.-W. Shin, B.-H. Kwon, J. Lee, S. Cho, J. I. Lee, Y. Park, J.-S. Lee, N. S. Cho, **Mechanistic understanding of improved performance of graphene cathode inverted organic light emitting diodes by photoemission and impedance spectroscopy**, ACS Appl. Mater. Interfaces, 10 26456-26454 (2018) DOI: 10.1021/acsami.8b07751
- H. T. Nguyen, T. L. Tran, D. T. Nguyen, E.-C. Shin, S.-H. Kang, J.-S. Lee, **Full Parametric Impedance Analysis of Photoelectrochemical Cells: Case of a TiO₂ Photoanode**, J. Korean Ceram. Soc. 55 244-260 (2018) DOI:10.4191/kcers.2018.55.3.11
- Y. H. Kim, P. Arunkumar, B. Y. Kim, S. Unithrattil, E. Kim, S.-H. Moon, J. Y. Hyun, K. H. Kim, D. Lee, J.-S. Lee, W. B. Im, **A zero thermal quenching phosphor**, Nat. Mater. DOI: [10.1038/NMAT4843](https://doi.org/10.1038/NMAT4843)
- J.-S. Lee, **A Superior Description of AC behavior in Polycrystalline Solid Electrolytes with Current-Constriction Effects**, J. Korean Ceram. Soc. 53 150-161 (2016) DOI: [10.4191/kcers.2016.53.2.150](https://doi.org/10.4191/kcers.2016.53.2.150)
- S.-H. Moon, Y. H. Kim, D.-C. Cho, E.-C. Shin, D. Lee, W. B. Im, J.-S. Lee, **Sodium ion transport in polymorphic scandium NASICON analog Na₃Sc₂(PO₄)₃ with new dielectric spectroscopy approach for current-constriction effects**, Solid State Ionics, 289 55-71 (2016) DOI: [10.1016/j.ssi.2016.02.017](https://doi.org/10.1016/j.ssi.2016.02.017)
- E.-C. Shin, J. Ma, P.-A. Ahn, H.-H. Seo, D. T. Nguyen, J.-S. Lee, **Deconvolution of Four Transmission-Line-Model Impedances in Ni-YSZ/YSZ/LSM Solid Oxide Cells and Mechanistic Insights**, Electrochim. Acta 188 240-253 (2016) DOI: [10.1016/j.electacta.2015.11.118](https://doi.org/10.1016/j.electacta.2015.11.118)
- E.-C. Shin, P.-A. Ahn, H.-H. Seo, D. T. Nguyen, S.-D. Kim, S.-K. Woo, J. H. Yu, J.-S. Lee, **Pinning-down polarization losses and electrode kinetics in cermet-supported LSM solid oxide cells in reversible operation**, Solid State Ionics, 277 1-10 (2015) DOI:[10.1016/j.ssi.2015.04.009](https://doi.org/10.1016/j.ssi.2015.04.009)
- G.-R. Kim, H.-H. Seo, J.-M. Jo, E.-C. Shin, J.-H. Yu, J.-S. Lee, **Moving boundary diffusion problem for hydration kinetics evidenced in non-monotonic conductivity relaxations of proton conducting perovskites**, Solid State Ionics 272 60-73 (2015) DOI:[10.1016/j.ssi.2015.01.003](https://doi.org/10.1016/j.ssi.2015.01.003)
- J.-H. Kim, E.-C. Shin, D.-C. Cho, S. Kim, S. Lim, K. Yang, J. Beom, J. Kim, S. Yamaguchi, J.-S. Lee, **Electrical Characterization of Polycrystalline Sodium β"-Alumina: Revisited and Resolved**, Solid State Ionics, 264 22-35 (2014) DOI: [10.1016/j.ssi.2014.06.011](https://doi.org/10.1016/j.ssi.2014.06.011)
- Y.-H. Kim, E.-C. Shin, S.-J. Kim, C.-N. Park, J. Kim, J.-S. Lee, **Chemical Diffusivity for Hydrogen Storage: Pneumatochemical Intermittent Titration Techniques**, J. Phys. Chem. C, 117 19771-19785 (2013) DOI: [10.1021/jp401286b](https://doi.org/10.1021/jp401286b)
- E.-C. Shin, Y.-H. Kim, S.-J. Kim, C.-N. Park, J. Kim, J.-S. Lee, **Pneumatochemical Immittance Spectroscopy for Hydrogen Storage Kinetics**, J. Phys. Chem. C, 117 19786-19808 (2013) DOI: [10.1021/jp4023647](https://doi.org/10.1021/jp4023647)
- J. Moon, J.-A. Park, S.-J. Lee, T. Zyung, Lee, J.-I., E.-C. Shin, J.-S. Lee, **A physicochemical mechanism of chemical gas sensors by an AC analysis**, Phys. Chem. Chem. Phys. 15 (23) (2013) 9361-9374 DOI:[10.1039/C3CP44684K](https://doi.org/10.1039/C3CP44684K)
- E.-C. Shin, H.-H. Seo, J.-H. Kim, P.-A. Ahn, S. M. Park, Y. W. Lim, S.-J. Kim, C. H. Kim, D. J. Kim, C. K. Hong, G. Seo, J.-S. Lee, **A new diagnostic tool for the percolating carbon network in the polymer matrix**, Polymer 54 999-1003 (2013) DOI: [10.1016/j.polymer.2012.12.057](https://doi.org/10.1016/j.polymer.2012.12.057).