

NANO KOREA 2020

July 1~3, KINTEX, Korea

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EDUCATION

University of Iowa	Ph.D	Biochemical Engineering	1995
Seoul National University	MS	Chemical Engineering	1988
Seoul National University	BS	Chemical Engineering	1986

PROFESSIONAL ACTIVITIES

- Professor, Department of Chemical & Biological Engineering, Korea University (2007-Present)
- Senior Research Scientist, Environmental Technology Division, Pacific Northwest National Laboratory (2002-2007)
- Assistant Research Scientist, Department of Chemical Engineering, Rensselaer Polytechnic Institute (1998-2000)
- Postdoctoral Research Associate, Department of Chemical and Biochemical Engineering, University of Iowa (1995-1998)

AWARD AND HONORS

- Korean Government Fellowship (1990-1993)
- Award for Outstanding Performance at PNNL (2003)
- Award for Outstanding Performance at PNNL (2006)
- Minister's Commendation for Technological Innovation of Energy at Ministry of Trade, Industry & Energy (2014)
- Minister's Commendation for Industrial Technology of the Month (2018)

MAIN SCIENTIFIC PUBLICATION

- Enzyme Precipitate Coating of Pyranose Oxidase on Carbon Nanotubes and Their Electrochemical Applications, *Biosens. Bioelectron.*, **87**, 365-372 (2017).
- Fabrication of Enzyme-based Coatings on Intact Multi-walled Carbon Nanotubes as Highly Effective Electrodes in Biofuel Cells, *Sci. Rep.*, **7**, 40202 (2017).
- Microwave-assisted Protein Digestion in a Plate Well for Facile Sampling and Rapid Digestion", *Anal. Chem.*, **89**, 10655-10660 (2017).
- Single Enzyme Nanoparticles Armored by a Thin Silicate Network: Single Enzyme Caged Nanoparticles, *Chem. Eng. J.*, **322**, 510-515 (2017).

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- Biocatalytic Membrane with Acylase Stabilized on Intact Carbon Nanotubes for Effective Antifouling via Quorum Quenching, *J. Membr. Sci.*, **554**, 357-365 (2018).
- Precipitation-Based Nanoscale Enzyme Reactor with Improved Loading, Stability and Mass Transfer for Enzymatic CO₂ Conversion and Utilization, *ACS Catal.*, **8**, 6526-6536 (2018).
- Tyrosinase-Immobilized CNT based Biosensor for Highly-Sensitive Detection of Phenolic Compounds, *Biosens. Bioelectron.*, **132**, 279-285 (2019).
- Recyclable Cytokines on Short and Injectable Polylactic Acid Fibers for Enhancing T-cell Function, *Adv. Funct. Mater.*, **29**, 1808361 (2019) [cover image article].
- Enzyme-immobilized Chitosan Nanoparticle as Environmentally-friendly and Highly Effective Antimicrobial Agents, *Biomacromolecules*, **20**, 2477-2485 (2019) [cover image article].
- Stabilized and Immobilized Carbonic Anhydrase on Electrospun Nanofibers for Enzymatic CO₂ Conversion and Utilization in Expedited Microalgal Growth, *Environ. Sci. Technol.*, **54**, 1223-1231 (2020).

RESEARCH INTERESTS

- Nanobiocatalysis
- Enzyme immobilization and stabilization
- Enzyme applications
- Nanomaterials for immune therapy