

Chang-Ha Lee



Chang-Ha Lee (M) is a full Professor in the Department of Chemical and Biomolecular Engineering at Yonsei University of Korea. His research activities include: **(i) Gas adsorption Technology** – H₂ PSA for IGCC, H₂ PSA for coal gas, CO₂ capture, Adsorption equilibrium and kinetic, Dynamic simulation for adsorption process; **(ii) Simulated Moving Bed Process** – SMB separation for fine chemicals and energetic materials; **(iii) Supercritical Fluid Technology** – Supercritical adsorption for geological CO₂ storage, Synthesis of nano-inorganic materials, Biomass cracking, Heavy residue upgrading; **(iv) Development of new adsorbents** – Mesoporous composite for clean

fossil fuels, Surface modified composite for CWA removal, Carbon materials and MgO composites for CO₂ capture, porous composites for olefin/paraffin separation; **(v) Multi-scale modelling and dynamic simulation** - coal-entrained gasifier, Selexol process with Claus unit, IGCC coal power plant.

He has successfully supervised 30 PhD students and 83 MS students. His research has been supported by various funding organisations including Korea government and industrial companies. He has authored/co-authored more than 200 publications in refereed international journals, holds US patents in the fields of new adsorbents, reactors, reaction processes. Also, he has presented 352 papers in national conference and 211 papers in international conferences. Prof. Chang-Ha Lee has been an organizing chair for two international conferences, and organizing/advisory/scientific committee of many conferences. His works were recognized by many awards such as 2015 PSE model-based innovation prize, award from prime minister of Korea, etc and serves several national and international journals. Now, his group consists of full-time 18 PhD students and 3 master students.

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■ EDUCATION

- 1988 – 1993** **University of Pittsburgh**
Ph.D. in Department of Chemical Engineering, 1993.
- 1980 – 1986** **Yonsei University**
M.S. in Department of Chemical Engineering, 1986.
B.S. in Department of Chemical Engineering, 1984.

■ WORK EXPERIENCE

- 1994 – Present** **Yonsei University**
- 2015 - present Adjunct professor, Huaiyin Normal University, China
 - 2010 – 2011 Chief Director, Yonsei Engineering Research Complex (YERC)
 - 2006 – 2009 Associate Dean for International Affair, College of Engineering
 - 2008 – present Personnel Evaluation Committee Member of College of Engineering
 - 2003 – 2004 Vice Director, Yonsei Engineering Research Complex (YERC)
 - 1999 – 2001 Head of Department of Chemical and Engineering
 - 1994 – present Professor, Department of Chemical and Biomolecular Engineering

1993 – 1994 **Merck & Co., Inc., USA**
Post Doctoral Fellow, Safety and Technology Operations Division

■ ACTIVITIES

Research activity

- 2012 – present Director, The Next-Generation Converged Energy Materials Research Center
(Budget: 12 million USD/10-yr supported by Ministry of National Defense
Research group: 11 Univ., 1 Res. Institute)
- 2006 – 2011 Director, Project Program for SMB processes for energy saving
(Budget: 7 million USD/5-yr supported by Ministry of Knowledge and Economy,
Research group: 5 Univ., 5 Companies, 2 Nat'l Res. Institutes)

Technology Transfer to Industry

- 2007 Non-corrosive continuous SCWO process
- 2005 PVSA Process of High Purity Oxygen Generation for Oxy-fuel Combustion
- 2001 Energy-Saving Adsorption Dryer

National-wide committee activity

- 2010 – 2014 Review Board, Korean National Research Foundation
- 2010 – 2012 Committee member for Climate Change Countermeasure R&D Program,
Ministry of Education, Science and Technology
- 2007 – 2007 Evaluation Committee Member of National Science & Technology Program
- 2006 – 2007 Evaluation Committee Member of Korean Research Council of Public
Science & Technology
- 2005 Committee Member of 10-year Plan for National Energy R&DD, Kemco

International academic activity

- 2015 International Advisory Committee, International Autumn Seminar on Propellants,
Explosives and Pyrotechnics, China
- 2014 – present Editorial Board, Adsorption, Journal of the International Adsorption Society
- 2014 Organizing Chair, 3rd Korea International Symposium of High Energy Materials, Korea
- 2012 – present Member of Director Board, International Adsorption Society
- 2011 – 2013 Vice-chair of Scientific Committee, World Congress of Chemical Engineering
- 2008 Organizing Chair of Adsorption Division; 8th International Conference on
Separation Science and Technology (ICSST08), Japan
- 2004 – 2008 Member of Director Board, International Adsorption Society
- 2000 – 2003 Organizing Chairman, The 3rd Pacific Basin Conference on Adsorption
Science and Technology, Korea
- 2001, 2004, 2007, 2010, 2013 Scientific Committee, International Conference on
Fundamentals of Adsorption, International Adsorption Associate
(USA, Japan, France, Japan, USA)
- 1999, 2006, 2009, 2012 International Advisory Committee & Organizing Committee,
The Pacific Basin Conference on Adsorption Science and Technology
(Australia, China, Singapore, Twain)
- 2003 International Advisory Committee, International Symposium on Natural
Resources Processing-Science and Technology (ISNRP), China.
- 2003 Program Committee, The 4th International Conference on Separation
Science and Technology, China.

Domestic academic activity

2015	Chief director of Research and Education Division, Korea Institute of Chemical Engineers
2012	General director, Korea Institute of Chemical Engineers
2009 – 2010	Editorial Board, The Korean Society For New And Renewable Energy
2006 – 2010	Member of Director Board, Korean Society for New and Renewable Energy
2005 – 2012	Editorial Board, The Korean Institute of Gas
2003 – Present	Member of Director Board and Editorial Board (Carbon Letters), Korean Carbon Society
2003 – 2007	Member of Director Board, the Korean Institute of Gas
2004 – 2006	Member of Director Board, Korean Institute of Chemical Engineers
2003 – 2007	Editorial Board, Korean J. Chem. Eng., KIChE
2002 – 2003	Editorial Board, J. of Ind. Eng. Chem., Korean Institute of Ind. Chem.

■ AWARDS

2014	Award for Contribution to Classic Chemical Engineering Technology, KIChE
2014	Outstanding Research Award, Yonsei University
2013	Prime Minister's Award: Contribution to Science and Technology Development
2011	Certificate of Outstanding Assessor of Basic Research Plan in 2011, Korean National Research Foundation
2011	One of Excellent 30 Technologies in Technology Commercialization in 2011, Ministry of Knowledge and Economy/Korea institute of Energy Technology Evaluation and Planning
2009, 2012	Award for Outstanding Lecture in Undergraduate Class
2009	Minister's Award of Ministry of Education, Science and Technology: Contribution to Technology Development for Global Climate Chang Protection
2006	Honorable Contribution Award for Korean J. Chem. Eng., KIChE
2005	One of Representative Excellent 50 Research Awards in 2005 Ministry of Science and Technology/Korea Science and Engineering Foundation
2004	Outstanding Research Award, Yonsei University
2003	Outstanding Research & Education Award, College of Engineering, Yonsei University
1999	Outstanding Paper Award for Young Professor (Shimgang), KIChE

■ RESEARCH FIELDS (Current project-based topics):

- **Gas Adsorption Technology:** H₂ recovery, Air separation, Oleffin/paraffin separation, Sulfur and nitrogen removal from refinery products and natural gas. Gas purification
- **Simulated Moving Bed Process:** Racemic separation, Fine chemical separation, Operational strategy.
- **Supercritical Fluids:** Upgrade for heavy oils, Biomass conversion, Carbon dioxide sequestration
- **New Adsorbents:** Porous nano-sized magnetite, Core/shell nano-sized magnetite, MgO for CO₂ removal

■ PUBLICATIONS (at present)

- International Journal Publication (Written by English: SCI papers): 225 papers
- Journal Publication (Written by Korean): 44 papers
- Conference Presentation Paper: international 211, domestic 352
- Patent: domestic 20 (10 registered, 10 pending), international 4 (3 registered, 1 pending)
- Book: Carbon Dioxide Capture and Storage (Korean, representative author Chang-Ha Lee with 8 authors), Chung Mun Gak, 2008.

Adsorption Science and Technology (English), Editor Chang-Ha Lee, World Scientific
Publishing Co., 2003