

Chan-Sol Ahn

Ph.D. Candidate /Research Fellow

Department of Fire Safety Research

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RESEARCH INTERESTS

- Computational Fluid Dynamics
- Natural Buoyant Plume
- Fire Dynamics Simulation
- Fire Protection
- Safety and Environment

EDUCATION

- Ph. D. course in Mechanical Engineering, Mar. 2007~Present
Korea University, Seoul, Rep. of Korea
Advisor: Prof. Sam S. Yoon
Major: Mechanical Engineering
- Master of Science in Mechanical Engineering, Feb. 2002
Inha University, Incheon, Rep. of Korea
Thesis: Aerodynamic design optimization of a compressor rotor with Navier-Stokes analysis.
Advisor: Prof. Kwang-Yong Kim
Major: Mechanical Engineering
- Bachelor of Science in Mechanical Engineering, Aug. 1999
Inha University, Incheon, Rep. of Korea

AWARD

- Special Achievement Award, *KICT*, 2012
- Excellent Report Award, *KICT*, 2016

EMPLOYMENT

- 2019/May to Present: **RESEARCH FELLOW**, Department of Fire Safety Research, *Korea Institute of Civil Engineering and Building Technology*, Seoul, Korea
- 2013/May to 2019/Apr.: **SENIOR RESEARCHER**, Department of Fire Safety Research, *Korea Institute of Civil Engineering and Building Technology*, Seoul, Korea
- 2010/Apr. to 2013/Apr.: **RESEARCH SPECIALIST**, Department of Fire Safety Research, *Korea Institute of Civil Engineering and Building Technology*, Seoul, Korea
- 2003/May to 2010/Mar.: **RESEARCHER**, Department of Fire Safety Research, *Korea Institute of Civil Engineering and Building Technology*, Korea

PUBLICATIONS (* corresponding author)

Journal Papers

1. **CS Ahn**, DY Kim, CW Park, MW Kim, TG Kim, BH Bang, S An, AL Yarin*, SS Yoon*, Experimental and Numerical Study of Smoke Behavior in High-rise Stairwells with Open and Closed Windows, *International Journal of Thermal Science*, submitted
2. **CS Ahn**, BH Bang, MW Kim, SC James, AL Yarin*, SS Yoon*, Theoretical, numerical, and experimental investigation of smoke dynamics in high-rise buildings, *International Journal of Heat and Mass Transfer*, 135, 604-613, 3, 2019
3. **CS Ahn**, CW Park, MW Kim, TG Kim, SC James, Y Yoon, AL Yarin*, SS Yoon*, Experimental and numerical investigation of smoke dynamics in vertical cylinders and open-air environment, *International Journal of Heat and Mass Transfer*, 135, 985-995, 2019
4. BH Bang, **CS Ahn**, YT Kim, MH Lee, MW Kim, AL Yarin*, SS Yoon*, Deflagration-to-detonation transition in pipes: The analytical theory, *Applied Mathematical Modelling*, 66, 332-343, 4, 2019
5. **CS Ahn**, BH Bang, MW Kim, TG Kim, SC James, AL Yarin*, SS Yoon*, Numerical investigation of smoke dynamics in unconfined and confined environments, *International Journal of Heat and Mass Transfer*, 127, 571-582, 1, 2018
6. BH Bang, **CS Ahn**, JG Lee, YT Kim, MH Lee, B Horn, D Malik, K Thomas, SC James, AL Yarin*, Theoretical, numerical, and experimental investigation of pressure rise due to deflagration in confined spaces, *International Journal of Thermal Sciences*, 120, 469-480, 2017
7. JY Kim, **CS Ahn**, Design of Mechanical Smoke Exhaust System in Large Space of Convention Center, *Open Journal of Fluid Dynamics*, 7 (3), 386-396, 2017
8. JY Kim, **CS Ahn**, Case Study of a Field Test for a Smoke Control System Using Sandwich Pressurization, *Fire Science and Engineering*, 30 (5), 87-92, 2016
9. JY Kim, **CS Ahn**, Design and numerical analysis on mechanical exhaust system in large space, *Journal of the Korean Society of Hazard Mitigation*, 15 (5), 103-108, 2015
10. **CS Ahn**, A Study on Characteristics of Turbulence Models for Numerical Fire Analysis in Large Space Structure, *Journal of the Korean Society of Hazard Mitigation*, 14 (5), 219-227, 2014
11. JY Kim, HJ Shin, **CS Ahn**, JS Kim, SH Joo, Development of the separate air-supply type of pressurization smoke control system for the stairwells of high-rise buildings in Korea, *Open Journal of Fluid Dynamics*, 4 (03), 251, 2014
12. **CS Ahn**, JH An, IH Yeo, A Numerical Study on Securing Fire Safety of the Evacuation Space in Apartment Buildings, *Journal of the Korean Society of Hazard Mitigation*, 14 (4), 1-8, 2014

13. **CS Ahn**, Numerical Analysis on Velocity to Prevent Smoke Backflow of Pressurized Stairwells in High Rise Building, *Journal of the Korean Society of Hazard Mitigation*, 12 (6), 23-30, 2012
14. **CS Ahn**, HY Kim, YH Yoo, KS Cho, A Study on CFD Simulation for Fire Spread of Residential Compartment, *Journal of Korean Society of Hazard Mitigation*, 12 (1), 23-29, 2012
15. **CS Ahn**, A Study for Estimation of Ventilation Capacity of Large Enclosure Considering Evacuation, *Journal of Korean Society of Hazard Mitigation*, 12 (5), 7-12, 2012
16. **CS Ahn**, HY Kim, YH You, HJ Kim, A Numerical Analysis for Fire Spread Mechanism of Residential Building Fire, *Fire Science and Engineering*, 26 (1), 31-37, 2012
17. **CS Ahn**, JY Kim, YH You, OS Kweon, SH Joo, A Study for Thermal Mechanism of Residential Combustibles with Numerical Modeling, *Fire Science and Engineering*, 25 (6), 58-63, 2011
18. HJ Kim, HY Kim, KH Park, **CS Ahn**, KH Kwon, An experimental study on the thermal property of concrete under the load ratio condition in fire, *Fire Science and Engineering*, 24 (3), 145-151, 2010
19. EJ Lee, **CS Ahn**, HJ Shin, KC Oh, UD Lee, Smoke Characteristics of a Small Scale Pool Fire, *Fire Science and Engineering*, 19 (3), 58-63, 2005
20. **CS Ahn**, KY Kim*, Design Optimization of An Axial-Flow Compressor Rotor Using Response Surface Method, *Transactions of the Korean Society of Mechanical Engineers*, B 27 (2), 155-162, 2003

Proceeding / Conference Papers

1. **CS Ahn**, J Kim, A Study on Computational Analysis of Smoke Movement in Indoor Complex Gymnasium, *Proceedings of the 3rd World Congress on Mechanical, Chemical, and Material Engineering (MCM'17)*, June, 8-10, 2017
2. **C Ahn**, J Kim, A Study for Estimation of Ventilation Capacity of Large Enclosure Considering Real Fire Load, *Pedestrian and Evacuation Dynamics 2012*, 1187-1195, 2014
3. **CS Ahn**, HY Kim, YH You, HJ Kim, A Study of Thermal Modeling for Fire Spread Mechanism in Residential Building, *Advanced Materials Research* 450, 454-461, 2012
4. **CS Ahn**, JY Kim, A study for a fire spread mechanism of residential buildings with numerical modeling, *Transactions on the Built Environment* 117, 185-196, 2011
5. **CS Ahn**, A Study for Fire Extension Mechanism between Floors in a Residential Building with Numerical Modeling, *Proceedings of Computational Fluids Engineering*, 512-517, 2011
6. **CS Ahn**, HY Kim, YH Yoo, YJ Lee, A study on the appropriateness of the performance criteria of a smoke control system among the local fire safety standard for underground spaces, *WIT Transactions on The Built Environment* 108, 427-436, 2009
7. **CS Ahn**, HS Chae, HY Kim, A Study on the performance Criteria of Smoke Control System for Underground Spaces Through Numerical Analysis, *Proceedings of the Korea Institute of Fire Science and Engineering Conference*, 2008
8. **CS Ahn**, HY Kim, YH Yoo, GY Jeon, A Study on Appropriateness of Performance Criteria of Smoke Control System for Underground Spaces (I), *Proceedings of the SAREK Conference*, 103-106, 2008
9. EJ Lee, **CS Ahn**, HJ Shin, KC Oh, ED Lee, Flames and combustion products of a small scale pool fire, *Proceedings of the Korea Institute of Fire Science and Engineering Conference*, 2005
10. **CS Ahn**, EJ Lee, HY Kim, NO Cho, HJ Shin, Combustion properties of the room interior materials, *Proceedings of the Korea Institute of Fire Science and Engineering Conference*, 2005
11. **CS Ahn**, KY Kim, Aerodynamic design optimization of a compressor rotor with Navier—Stokes analysis, *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of power and energy*, 83, 2003

12. **CS Ahn**, KY Kim, Aerodynamic design optimization of an axial flow compressor rotor, *ASME Turbo Expo 2002: Power for Land, Sea, and Air*, 813-819, 2002

Google Scholar

- https://scholar.google.co.kr/citations?hl=ko&user=YoU6xGQAAAAJ&view_op=list_works

Theses

- **CS Ahn**, Aerodynamic design optimization of a compressor rotor with Navier-Stokes analysis, M.S. Thesis, *Inha University*, 2002.

Patents

1. **CS Ahn**, DY Kim, System and method for predicting smoke damages of building fire, *Korean Intellectual Property Office* 10-2019-0117455, 2019
2. HJ Kim, HY Kim, IH Yeo, **CS Ahn**, Non-welding type concrete-filled steel tube column having slot and method for fabricating the same, *US Patent App.* 13/615,633, 2013

CERTIFICATION

- Construction Machinery Engineer, *Human Resources Development Service of Korea*, 1997
- Fire Equipment Engineer, *Human Resources Development Service of Korea*, 1997
- Cisco Certified Network Professional (CCNP), *CISCO*, 2005
- Cisco Certified Design Professional (CCDP), *CISCO*, 2005
- Sun Certified System Administrator(SCSA), *SUN*, 2002
- Sun Certified Network Administrator(SCNA), *SUN*, 2002

SKILLS

- High Performance Computer(Clustering System): Intel Xeon, Windows Server, OpenMP, MPI
- Thermal Conductivity Tester: TCT-426(Netzsch), LFA-1000(Linseis)
- Thermal Expansion Tester: DIL-402C(Netzsch)
- Flow visualization: Particle Image Velocimetry
- Computational fluid dynamics code: FORTRAN, CFX, FDS
- Design software program: Tecplot, Origin, AutoCAD

RESEARCH PROJECTS

- Development of ICT-based complex plant operation management technology in connection with waste resources and energy system, 2016.06.01. ~ 2020.12.31
- Development of fire risk factor and damage prediction system, 2016.12.01. ~ 2019.11.31

- Develop smoke control design standards based on performance of buildings, 2015.07.31. ~ 2020.06.30
- Development of refractory performance enhancement technology for construction materials using nanotechnology, 2013.10.04. ~ 2013.12.31
- Development of LES model code for large fire analysis, 2013.01.01. ~ 2014.12.31
- Development of Large capacity smoke control equipment, 2013.01.01. ~ 2016.12.31
- Development of heat pump supply and evaluation technology, 2012.06.01. ~ 2013.05.31
- A Study on the Optimal Design Technology of Air Curtain for Smoke Control, 2012.04.01. ~ 2013.03.31
- Game-type education and training S/W development for cultural assets fire suppression, 2009.03.13. ~ 2009.08.12

RESEARCH GRANTS

- Ministry of Land, Infrastructure and Transport: 2015.07.31 ~ 2020.06.30, 2016.06.01 ~ 2020.12.31
 - Ministry of Science and ICT: 2013.01.01 ~ 2016.12.31, 2013.10.04 ~ 2013.12.31, 2016.12.01 ~ 2019.11.31
 - Ministry of Trade, Industry and Energy: 2012.06.01 ~ 2013.05.31, 2013.01.01 ~ 2014.12.31
 - National Fire Agency: 2009.03.13 ~ 2009.08.12., 2012.04.01 ~ 2013.03.31
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