



전 충 환 교수

기계공학부

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연구분야

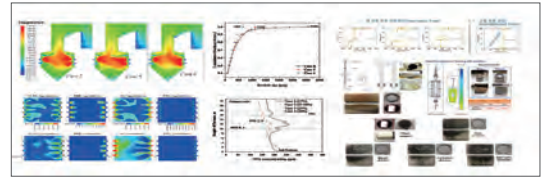
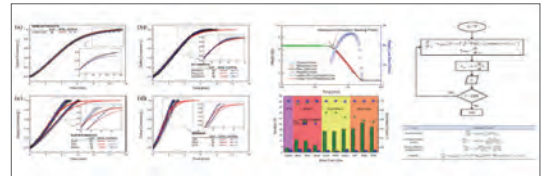
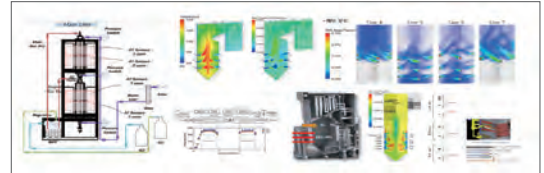
CO₂-free and Solid fuel combustion, gasification
Metallurgical coke and PCI system / Thermal power plant(Ammonia, Coal) simulation
Future Eco-friendly technology / AI based application for combustion optimization

수상

Best Paper Award, Power Generation Industry Conference. PGIC, 2008
우수논문상, 한국마린엔지니어링학회, 2011
지구촌기술나눔센터 적정기술 우수논문상, 한국연구 재단, 2016

대표연구

- Development of optimal technology for coal-gas co-firing for simultaneous reduction of CO2 and PM
Flexibility-Enhanced Random Pore Model
Development of stabilization and optimization technology for biomass boiler



주요 연구실적

- Effects of particle size on bed-to-surface heat transfer in bubbling fluidized bed heat exchangers of 550 MWe ultra-supercritical CFB boiler, Energy, Vol. 222, pp.119889, 2021
Attrition and product layer development of limestone during simultaneous calcination and sulfation in a fluidized bed reactor, Fuel, Vol. 293, pp. 120280, 2021
Optimization of separated overfire air to reduce NOX emissions under combustion stability for the retrofit of a 500 MW tangentially pulverized coal boiler, Fuel, vol 289, pp.119764, 2021
Pressurized entrained-flow pyrolysis of lignite for enhanced production of hydrogen-rich gas and chemical raw materials, Journal of Analytical and Applied Pyrolysis Vol.145, pp.104741, 2020
Evaluation of Torrefied Empty Fruit Bunch(EFB) and Kenaf Combustion Characteristics: Comparison Study between EFB and Kenaf Based on Microstructure Analysis and Thermogravimetric Methods, Energy fuels, Vol.34, pp.7094-7104, 2020

주요 연구과제

- AI기술을 활용한 보일러 효율최적화 기술개발, 한국서부발전(주), 2021.10~2023.12, 9억8천만원(AI, 연소 최적화, 친환경)
CO2 저감을 위한 석탄화력발전 가스혼소기술 개발, 한국중부발전(주), 2019.09~2021.09, 8억원(가스 혼소, 연소 최적화, 친환경)
FINEX 미분탄 연소 메커니즘 규명 및 연소대 온도 예측 모델 개발, 포스코, 2018.02~2021.03, 4억4천만원(연소 특성 예측, CFD, 연소 최적화)

학회 활동

- 한국연소학회/한국에너지후변화학회 부회장
2019 International Symposium on Clean Energy and Advanced Materials, Co-Chair Committee
친환경 청정 화력발전 국제 세미나(8차) 개최, 2019

산학 협력 활동

- 포스코 전문교수: 연원료 분야 연구개발 및 기술자문
한국남부발전 유동층발전기술지원센터 설립
한국남동발전 바이오매스연료연소센터 개소
중국 칭화대 해외석좌 교수(에너지분야)