

Prof. GÖRKEM KÜLAH

Personal Information

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Education Information

Doctorate, The University Of British Columbia, Chemical Engineering, Canada 1999 - 2004

Post Graduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Kimya Mühendisliği (YL) (Tezli), Turkey 1998 - 1999

Under Graduate, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, Turkey 1993 - 1998

Foreign Languages

English, C1 Advanced

Research Areas

Chemical Engineering and Technology, Basic Operations and Thermodynamics, Fluid Mechanics, Engineering and Technology

Academic Titles / Tasks

Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2018 - Continues

Associate Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2011 - 2018

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2005 - 2011

Professional Experience

Rectorate Commissioner, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2018 - Continues

Rectorate Commissioner, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2018 - Continues

Vice Dean, Middle East Technical University, Faculty of Engineering, 2016 - Continues

Courses

Advising Theses

- Külah G., EFFECT OF ELECTROLYTE/SULFUR RATIO IN THE CATHODE ON THE ELECTROCHEMICAL PERFORMANCE OF Li-S BATTERIES, Post Graduate, N.BER(Student), 2019
- Külah G., Modeling of reaction and degradation mechanisms in lithium-sulfur batteries, Post Graduate, N.ERİŞEN(Student), 2019
- Külah G., CHARACTERIZATION OF LOCAL FLOW BEHAVIOUR IN CONICAL SPOUTED BEDS, Post Graduate, A.YENİÇERİ(Student), 2019
- SELÇUK N., KÜLAH G., Nongray gas and nongray particle effects in modeling fluidized bed combustors, Doctorate, C.ATEŞ(Student), 2018
- Külah G., Selçuk N., Mathematical modeling of a bubbling fluidized bed combustor co-fired with cotton residue and lignite, Post Graduate, M.SONER(Student), 2018
- KÜLAH G., Investigation of effect of kaolin addition on combustion characteristic of olive residue, Post Graduate, Ö.BATIR(Student), 2017
- KÜLAH G., Bed-to-surface heat transfer in conical spouted and spout-fluid beds, Post Graduate, O.YAMAN(Student), 2017
- SELÇUK N., KÜLAH G., Modeling of radiative heat transfer in strongly forward scattering media of bubbling fluidized bed combustor with and without recycle, Post Graduate, Ö.ŞEN(Student), 2017
- KÜLAH G., Drying of natural zeolite powders in vibrated fluidized beds, Post Graduate, C.ÖCAL(Student), 2013
- SELÇUK N., KÜLAH G., Radiative-convective model for one-dimensional cloudy atmosphere, Post Graduate, M.Yusuf(Student), 2011
- SELÇUK N., KÜLAH G., Radiative-convective model for one-dimensional cloudy sky atmosphere, Post Graduate, M.YUSUF(Student), 2011
- SELÇUK N., KÜLAH G., Investigation of combustion characteristics of indigenous lignite in a 150 kWt circulating fluidized bed combustor, Doctorate, A.BATU(Student), 2008
- SELÇUK N., KÜLAH G., Radiative-convective model for one-dimensional longwave clear sky atmosphere, Post Graduate, G.AYDIN(Student), 2008
- SELÇUK N., KÜLAH G., Mathematical modeling of fbcs co-fired with lignite and biomass, Post Graduate, E.MEHMET(Student), 2007
- KÜLAH G., COATING OF PHARMACEUTICAL GRANULES IN FLUIDIZED BEDS, Post Graduate, Ö.KAYA(Student), 2007
- SELÇUK N., KÜLAH G., Mathematical modeling of fluidized bed combustors with radiation model, Post Graduate, D.ECE(Student), 2006

Jury Memberships

- Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, September, 2018
- Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, August, 2018
- Post Graduate, Post Graduate, Hacettepe Üniversitesi, June, 2018
- PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Orta Doğu Teknik Üniversitesi, June, 2018
- PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Orta Doğu Teknik Üniversitesi, January, 2018

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

1. Performance of banded SLW-1 in presence of non-gray walls and particles in fluidized bed combustors

YAŞAR M. S. , Ozen G., SELÇUK N., KÜLAH G.

JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER, vol.257, 2020 (Journal Indexed in SCI)

- II. **Modeling of Fluidized Bed Combustion of Lignite with High Nitrogen Content Cotton Residue**
Yasar M. S. , Selcuk N., Kulah G.
COMBUSTION SCIENCE AND TECHNOLOGY, 2019 (Journal Indexed in SCI)
- III. **Influence of fly ash composition on non-gray particle radiation in combustng systems**
Ates C., SELÇUK N., KÜLAH G.
JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER, vol.215, pp.25-40, 2018 (Journal Indexed in SCI)
- IV. **Significance of particle concentration distribution on radiative heat transfer in circulating fluidized bed combustors**
Ates C., SELÇUK N., KÜLAH G.
INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, vol.117, pp.58-70, 2018 (Journal Indexed in SCI)
- V. **Effect of changing biomass source on radiative heat transfer during co-firing of high-sulfur content lignite in fluidized bed combustors**
Ates C., SELÇUK N., KÜLAH G.
APPLIED THERMAL ENGINEERING, vol.128, pp.539-550, 2018 (Journal Indexed in SCI)
- VI. **Effect of limestone addition on radiative heat transfer during co-firing of high-sulfur content lignite with biomass in fluidized bed combustors**
Ates C., Selcuk N., Kulah G.
COMBUSTION SCIENCE AND TECHNOLOGY, vol.190, no.8, pp.1377-1391, 2018 (Journal Indexed in SCI)
- VII. **Assessment of gas radiative property models in the presence of nongray particles**
Ates C., OZEN G., Selcuk N., Kulah G.
NUMERICAL HEAT TRANSFER PART A-APPLICATIONS, vol.73, no.6, pp.385-407, 2018 (Journal Indexed in SCI)
- VIII. **Influence of spectral particle properties on radiative heat transfer in optically thin and thick media of fluidized bed combustors**
Ates C., Sen O., SELÇUK N., KÜLAH G.
INTERNATIONAL JOURNAL OF THERMAL SCIENCES, vol.122, pp.266-280, 2017 (Journal Indexed in SCI)
- IX. **Monitoring of liquid sprayed conical spouted beds by recurrence plots**
Savari C., KÜLAH G., KÖKSAL M., Sotudeh-Gharebagh R., Zarghami R., Mostoufi N.
POWDER TECHNOLOGY, vol.316, pp.148-156, 2017 (Journal Indexed in SCI)
- X. **Benchmarking grey particle approximations against nongrey particle radiation in circulating fluidized bed combustors**
Ates C., SELÇUK N., Ozen G., Kulah G.
NUMERICAL HEAT TRANSFER PART B-FUNDAMENTALS, vol.71, no.5, pp.467-484, 2017 (Journal Indexed in SCI)
- XI. **Radiative heat transfer in strongly forward scattering media of circulating fluidized bed combustors**
Ates C., Ozen G., SELÇUK N., KÜLAH G.
JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER, vol.182, pp.264-276, 2016 (Journal Indexed in SCI)
- XII. **Early Detection of Agglomeration in Conical Spouted Beds Using Recurrence Plots**
Savari C., KÜLAH G., Sotudeh-Gharebagh R., Mostoufi N., KÖKSAL M.
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol.55, no.26, pp.7179-7190, 2016 (Journal Indexed in SCI)
- XIII. **Particle Velocity, Solids Hold-Up, and Solids Flux Distributions in Conical Spouted Beds Operating with Heavy Particles**
KÜLAH G., Sari S., KÖKSAL M.
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol.55, no.11, pp.3131-3138, 2016 (Journal Indexed in SCI)
- XIV. **CFD Simulations of Hydrodynamics of Conical Spouted Bed Nuclear Fuel Coaters**
Lule S. S. , Çolak Ü., KÖKSAL M., KÜLAH G.
CHEMICAL VAPOR DEPOSITION, vol.21, pp.122-132, 2015 (Journal Indexed in SCI)
- XV. **Flow structure characterization in conical spouted beds using pressure fluctuation signals**
MOSTOUFI N., KÜLAH G., KÖKSAL M.

- POWDER TECHNOLOGY, vol.269, pp.392-400, 2015 (Journal Indexed in SCI)
- XVI. **COMPARISON BETWEEN COMBUSTION BEHAVIOR OF SOLID FUELS AND THEIR CHARs UNDER OXY-FUEL CONDITIONS**
Inmas S. V. , KÜLAH G., SELÇUK N.
COMBUSTION SCIENCE AND TECHNOLOGY, vol.186, pp.398-408, 2014 (Journal Indexed in SCI)
- XVII. **Characterization of gas-solid flow in conical spouted beds operating with heavy particles**
Sari S., KÜLAH G., KÖKSAL M.
EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol.40, pp.132-139, 2012 (Journal Indexed in SCI)
- XVIII. **Investigation and scale-up of hot-melt coating of pharmaceuticals in fluidized beds**
KÜLAH G., Kaya O.
POWDER TECHNOLOGY, vol.208, no.1, pp.175-184, 2011 (Journal Indexed in SCI)
- XIX. **Validation of a FBC model for co-firing of hazelnut shell with lignite against experimental data**
KÜLAH G.
EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol.34, no.5, pp.646-655, 2010 (Journal Indexed in SCI)
- XX. **Design assessment of a 150 kWt CFBC Test Unit**
Batu A., SELÇUK N., KÜLAH G.
EXPERIMENTAL THERMAL AND FLUID SCIENCE, vol.34, no.3, pp.275-281, 2010 (Journal Indexed in SCI)
- XXI. **Mathematical Modeling of a Bubbling Fluidized Bed Combustor Cofired with Lignite and Biomass**
KÜLAH G., Morali E. M. , SELÇUK N.
COMBUSTION SCIENCE AND TECHNOLOGY, vol.182, pp.600-612, 2010 (Journal Indexed in SCI)
- XXII. **A comprehensive fluidized bed combustion model coupled with a radiation model**
Alagoz D. E. , KÜLAH G., SELÇUK N.
COMBUSTION SCIENCE AND TECHNOLOGY, vol.180, no.5, pp.910-926, 2008 (Journal Indexed in SCI)
- XXIII. **Flow behavior and regime transition in a high-density circulating fluidized bed riser**
Kim S., Kirbas G., Bi H., Lim C., Grace J.
CHEMICAL ENGINEERING SCIENCE, vol.59, no.18, pp.3955-3963, 2004 (Journal Indexed in SCI)
- XXIV. **Flow structure and thickness of annular downflow layer in a circulating fluidized bed riser**
Kim S., Kirbas G., Bi H., Lim C., Grace J.
POWDER TECHNOLOGY, vol.142, no.1, pp.48-58, 2004 (Journal Indexed in SCI)
- XXV. **The method of lines solution of the discrete ordinates method for radiative heat transfer in enclosures**
Selcuk N., Kirbas G.
NUMERICAL HEAT TRANSFER PART B-FUNDAMENTALS, vol.37, no.3, pp.379-392, 2000 (Journal Indexed in SCI)

Refereed Congress / Symposium Publications in Proceedings

- I. **MODELLING OF FBC OF LIGNITE WITH HIGH NITROGENCONTENT COTTON RESIDUE**
Yaşar M. S. , Selçuk N., Külah G.
11th Mediterranean Combustion Symposium, Tenerife, Spain, 16 - 20 June 2019
- II. **Gas Velocity Distributions in Conical Spouted Beds with High Density Particles**
GÜLER N., KÖKSAL M., KÜLAH G.
Fluidization XVI, Guilin, China, 26 - 31 May 2019
- III. **Modeling the effect of electrolyte-to-sulfur ratio in the cathode on the electrochemical performance of a lithium-sulfur battery**
Emerce N. B. , KÜLAH G., EROĞLU PALA D.
9th Eastern Mediterranean Chemical Engineering Conference (EMCC 9), Ankara, Turkey, 31 August - 02 September 2018
- IV. **Modeling of reaction mechanisms in lithium-sulfur batteries**
ERİŞEN N., KÜLAH G., EROĞLU PALA D.
9th Eastern Mediterranean Chemical Engineering Conference (EMCC 9), Ankara, Turkey, 31 August - 02 September

2018

- V. **INFLUENCE OF SPECTRAL PARTICLE PROPERTIES ON THE PREDICTIVE ACCURACY OF GAS PROPERTY APPROXIMATIONS**
ATEŞ C., Selçuk N., KÜLAH G.
Eurotherm Seminar 110 – Computational Thermal Radiation in Participating Media - VI, Cascais, Portugal, 11 - 13 April 2018
- VI. **Course Design for Curriculum Internationalization: Project- Based International Learning Experience @Home**
Stefanova A., Bandali Z., AYRANCI İ., KÜLAH G.
67th Canadian Chemical Engineering Conference, Edmonton, Canada, 22 - 25 October 2017
- VII. **Surface-to-Bed Heat Transfer in Conical Spout-Fluid Beds with High Density Particles**
Yaman O., KÖKSAL M., KÜLAH G.
Symposium on Spouted Beds (ISSB-7), Barselona, Spain, 1 - 05 October 2017
- VIII. **Effects of particle density and gas inlet diameter on particle velocity, solids hold-up and flux distributions in conical spouted beds with high density particles**
Golshan S., Yeniceri A., Zarghami R., Mostoufi N., KÖKSAL M., KÜLAH G.
7th International Symposium on Spouted Beds (ISSB-7), Barselona, Spain, 1 - 05 October 2017
- IX. **Effect Of Kaolin Addition On Alkali Capture Capability During Combustion Of Olive Residue**
Batir O., Selçuk N., KÜLAH G.
10th Mediterranean Combustion Symposium, Napoli, Italy, 17 - 21 September 2017
- X. **Effect Of Limestone Addition on Radiative Heat Transfer During Co-Firing of High-Sulfur Content Lignite With Biomass in Fluidized Bed Combustors**
ATEŞ C., Selçuk N., KÜLAH G.
10th Mediterranean Combustion Symposium, Napoli, Italy, 17 - 21 September 2017
- XI. **CFD-DEM Simulation of a Conical Spouted Bed Operating with High Density Particles**
Golshan S., Zarghami R., Mostoufi N., KÖKSAL M., KÜLAH G.
7th International Conference on Discrete Element Methods (DEM), Dalian, China, 1 - 04 August 2016, vol.188, pp.947-955
- XII. **Monitoring of the hydrodynamic instabilities in conical spouted beds by recurrence plot analysis of pressure fluctuations and acoustic emission signals**
Savari C., KÜLAH G., KÖKSAL M., Sotudeh Gharebagh R., Mostoufi N., Zarghami R.
FLUIDIZATION XV, 22 - 27 May 2016
- XIII. **Hydrodynamic characteristics of fine zeolite particles in a conical spout fluid bed with a draft tube**
Nasirimarekani V., Karabiyik A. G., KÖKSAL M., KÜLAH G.
64th Canadian Chemical Engineering Conference, 19 - 22 October 2014
- XIV. **Simultaneous analyses of pressure vibration and acoustic signals from a conical spouted bed with high density particles**
Nasirimarekani V., KÜLAH G., KÖKSAL M., Savari C., Mostoufi N., Sotudeh Ghare R.
64th Canadian Chemical Engineering Conference, 19 - 21 October 2014
- XV. **Comparison between combustion behaviour of solid fuels and their chars under oxy fuel conditions**
Inmas S. V., KÜLAH G., Selçuk N.
8th Mediterranean Combustion Symposium, 8 - 13 September 2013
- XVI. **Gas Mixing in Conical Spouted Beds with Heavy Particles**
Külah G.
6th International Symposium on Spouted Beds, Vancouver, Canada, 14 - 17 October 2012, pp.295
- XVII. **Characterization of Gas-Solid Flow in Vibrated Fluidized Beds Operating with Natural Zeolite Powders**
Külah G.
62nd Canadian Chemical Engineering Conference, Vancouver, Canada, 14 - 17 October 2012, pp.541
- XVIII. **Design Assessment of a 150 kWt CFBC Test Unit**
Batu A., Selçuk N., KÜLAH G.

Proceedings of the 6th Mediterranean Combustion Symposium, 7 - 11 September 2009

- XIX. Evaluation of Method of Lines Solution of Discrete Ordinates Method and Finite Volume Method in a Planar Medium**
Selçuk N., KIRBAŞ G., Tarhan T.
Int. Conf. Computational Heat and Mass Transfer, 26 - 29 April 1999
- XX. A Novel System for Measuring Solids Dispersion In Circulating Fluidized Beds**
KÜLAH G., Song X. Q. , Bi H. T. , Lim C. J. , Grace J. R.
Proceedings of the 9th International Conference on Circulating Fluidized Beds, 13 - 16 January 2008
- XXI. Mathematical Modeling of a Bubbling FBC Co fired with Lignite and Biomass**
KÜLAH G., Morali E. M. , Selçuk N.
Proceedings of the 6th Mediterranean Combustion Symposium, 7 - 11 June 2009
- XXII. Hydrodynamics of Conical Spouted Beds With High Density Particles**
Sari S., Polat A., Zaglanmis D., KÜLAH G., KÖKSAL M.
Proceeding of 10th International Conference on Circulating Fluidized Beds, 1 - 05 May 2011
- XXIII. Radiative Convective Model for One Dimensional Longwave Clear Sky Atmosphere**
Aydin G., KÜLAH G., Selçuk N.
Eurotherm Seminar #83 - Computational Thermal Radiation in Participating Media, 15 - 17 April 2009
- XXIV. A COMPREHENSIVE FLUIDIZED BED COMBUSTION MODEL COUPLED WITH A RADIATION MODEL**
Alagoz D. E. , KÜLAH G., Selçuk N.
Proceedings of the 5th Mediterranean Combustion Symposium, 9 - 13 September 2007
- XXV. Radial Distribution of Local Concentration Weighted Particle Velocities in High Density Circulating Fluidized Beds**
KIRBAŞ G., Kim S. W. , Bi X., Lim J., Grace J. R.
Proceedings of the 12th Fluidization Conference, 13 - 17 May 2007
- XXVI. Multiscale analysis of solids flux signals measured in a high density circulating fluidized bed using wavelet transformation**
Kirbas G., Ellis N.
8th International Conference on Circulating Fluidized Beds, Hangzhou, China, 10 - 13 May 2005, pp.75-82
- XXVII. Solids Motion near the Wall of High Density Circulating Fluidized Beds**
KIRBAŞ G., Lim C. J. , Grace J. R. , Bi H. T.
Proceedings of 4th World Congress on Particle Technology, 21 - 25 July 2002

Supported Projects

- KÜLAH G., SONER YAŞAR M., Project Supported by Higher Education Institutions, PAMUK ARTIĞI VE LİNYİTİN KABARCIKLI AKIŞKAN YATAKLI YAKICIDA BİRLİKTE YAKILMASININ MATEMATİKSEL MODELLENMESİ, 2018 - 2019
Külah G., Köksal M., TUBITAK Project, Taskın Akışkan Yataklarda Gaz Parçacık Akış Dinamigi ve Yatak Yüzey Isı Transferi, 2015 - 2018
- KÜLAH G., Project Supported by Higher Education Institutions, DEVELOPMENT OF THREE WAY CATALYTIC CONVERTER FOR AUTOMOTIVE EXHAUST GAS, 2017 - 2017
- KÜLAH G., ATEŞ C., Project Supported by Higher Education Institutions, Dolaşimli Akışkan Yataklı Yakıcı Sisteminde Isınım Isı Akışının Ölçülmesi, 2017 - 2017
- KÜLAH G., BAYRAM B., Project Supported by Higher Education Institutions, Otomobil Egzoz Gazları için Üç Yollu Katalitik Dönüştürücü Geliştirilmesi, 2017 - 2017
- KÜLAH G., Project Supported by Higher Education Institutions, PAMUK ARTIĞI VE LİNYİTİN KABARCIKLI AKIŞKAN YATAKLI YAKICIDA BİRLİKTE YAKILMASININ MATEMATİKSEL MODELLENMESİ, 2017 - 2017
- KÜLAH G., Project Supported by Higher Education Institutions, AKIŞKAN YATAKLI YANMA ODALARINDA PARÇACIK TAŞINMASININ İNCELENMESİ, 2017 - 2017
- KÜLAH G., Project Supported by Higher Education Institutions, FEN BİLİMLERİ ENSTİTÜSÜ/LİSANSÜSTÜ TEZ PROJESİ, 2014 - 2016

Klah G., TUBITAK Project, Doęal Zeolit Klinoptilolitin Akıř Borulu Tařkın Akıřkan Yatakta Kurutulması, 2012 - 2015
KLAH G., cal C., Project Supported by Higher Education Institutions, Kilinoptilolitin Titreřimli Akıřkan Yatakta Kurutulması, 2012 - 2013

Memberships / Tasks in Scientific Organizations

European Society for Engineering Education, Executive Board Member, 2019 - Continues, Belgium
Enerji-Fosil Yakıtlar-Kmr, Biyoktle ve Atık Teknolojileri, Member of Advisory Board, 2018 - Continues

Scientific Refereeing

POWDER TECHNOLOGY, SCI Journal, August 2019

POWDER TECHNOLOGY, SCI Journal, October 2018

FUEL PROCESSING TECHNOLOGY, SCI Journal, July 2018

TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, Middle East Technical University, Turkey, July 2018

TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, Middle East Technical University, Turkey, July 2018

JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY, SCI Journal, May 2018

JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY, SCI Journal, April 2018

PARTICUOLOGY, SCI Journal, March 2018

Particuology, SCI Journal, February 2018

PARTICUOLOGY, SCI Journal, January 2018

Citations

Total Citations (WOS):322

h-index (WOS):9

Awards

Klah G., Seluk N., Gri - Olmayan Gaz ve Gri - Olmayan Paracık Etkilerinin Akıřkan Yataklı Yakıcılarda Modellenmesi, Mustafa Parlar Vakfı, December 2018