

Semih Eser

Professor of Energy and Geo-Environmental Engineering

Department of Energy and Mineral Engineering

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The Pennsylvania State University

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EDUCATION

The Pennsylvania State University	Ph. D. in Fuel Science	1981-1986
Middle East Technical University	MS in Chemical Engineering	1976-1978
Middle East Technical University	BS in Chemical Engineering	1971-1976

PROFESSIONAL EXPERIENCE

The Pennsylvania State University

Department of Energy and Mineral Engineering

Professor	2007 -
Program Officer of <i>Energy and Fuels Engineering Option</i>	2007 -

Department of Energy and Geo-Environmental Engineering

Professor	2007
Associate Professor	1998 - 2007
Associate Head	2001 - 2006
Acting Department Head	1/1-8/15, 2004

Department of Materials Science and Engineering

Associate Professor	1997-1998
Assistant Professor/Research Associate	1989-1997
Research Associate	1988-1989
Graduate Assistant	1981-1986

The Energy Institute

Carbon Materials Program	Coordinator	2000-present
Lab. for Hydrocarbon Proc. Chem.	Director	1998-2000
	Associate Director	1995-1998
<i>Auburn University</i>		
Department of Chemical Engineering	Research Associate	1987-1988
<i>Minerals Research and Exploration Institute of Turkey</i>		
Department of Coal Technology	Research Engineer	1978-1981
<i>Middle East Technical University, Ankara, Turkey</i>		
Department of Chemical Engineering	Graduate Assistant	1976-1978

RESEARCH

Principal Areas of Research

- Inhibition of Solid Deposition from Heated Fuels
- Molecular Analysis of Complex Hydrocarbon Mixtures
- Microscopic, Spectrometric, and Reactivity Analysis of Carbonaceous Solids
- Effects of Metal Surfaces on Solid Deposition from Hydrocarbons
- Preparation and Characterization of Activated Carbons
- Carbonization of Petroleum Feedstocks and Mesophase Development

PUBLICATIONS

Forty-eight refereed papers in journals, four contributions to refereed book chapters, and over one hundred articles published in conference proceedings.

Edited Books

Handbook of Petroleum and Natural Gas Refining and Processing

Editors: M. R. Riazi, S. Eser, J. L. Peña, S. R. Agrawal

1400 double-spaced manuscript pages

Under contract, to be published in 2009 by ASTM International

Refereed Journal Publications

1. R. Venkataraman and S. Eser, "Characterization of Deposits Formed on Diesel Injectors in Field Test and from Thermal Oxidative Degradation of n-hexadecane in a Laboratory Reactor," *Chemistry Central Journal* **2**, 25, 2008.
2. R. Venkataraman and S. Eser, "Characterization of Solid Deposits Formed from Jet Fuel Degradation under Pyrolytic Conditions: Metal Sulfides," *Ind. Eng. Chem. Res.* **47**, 9351–9360, 2008.
3. R. Venkataraman and S. Eser, "Characterization of Solid Deposits Formed from Short Durations of Jet Fuel Degradation: Carbonaceous Solids," *Ind. Eng. Chem. Res.* **47**, 9337–9350, 2008.
4. R. Venkataraman and S. Eser, "Characterization of Solid Deposits from the Thermal-oxidative Degradation of Jet Fuel," *Int. J. Oil, Gas and Coal Technology*, **1**(1/2), 2008.
5. J. P. Mathews, S. Eser, P. G. Hatcher, A. W. Scaroni, "The shape of Pulverized Bituminous Vitrinite Coal Particles," *KONA Powder and Particle* **25**, 145-152, 2007.
6. G. Wang and S. Eser, "Molecular Composition of the High-Boiling Components of Needle Coke Feedstocks and Mesophase Development," *Energy Fuels* **21**, 3563-3572, 2007.
7. S. Eser and G. Wang, "A Laboratory Study of a Pretreatment Approach To Accommodate High-Sulfur FCC Decant Oils as Feedstocks for Commercial Needle Coke," *Energy Fuels* **21**, 3573-3582, 2007.
8. D. González, O. Altin, S. Eser, and A. B. Garcia, "Temperature-programmed Oxidation Studies of Carbon Materials Prepared from Anthracites by High Temperature Treatment," *Mater. Chem. Phys.* **101**(1), 137-141, 2007.
9. S. Eser, R. Venkataraman, and O. Altin, "Utility of Temperature-Programmed Oxidation for Characterization of Carbonaceous Deposits from Heated Jet Fuel," *Ind. Eng. Chem. Res.* **45**(26), 8956-8962, 2006.
10. S. Eser, R. Venkataraman, and O. Altin, "Deposition of Carbonaceous Solids on Different Substrates from Thermal Stressing of JP-8 and Jet A Fuels," *Ind. Eng. Chem. Res.* **45**(26), 8946-8955, 2006.
11. O. Altin and S. Eser, "Pre-oxidation of Inconel Alloys for Inhibition of Carbon Deposition from Heated Jet Fuel," *Oxid. Met.* **65**, 75-99, 2006.
12. H. Groenzin, O. C. Mullins, S. Eser, J. Mathews, M. G. Yang, D. Jones, "Molecular Size of Asphaltene Solubility Fractions," *Energy Fuels* **17**, 498-503, 2003.

13. J. Xie, P. K. Sharma, V.V. Varadan , V.K. Varadan, B. K. Pradhan , S. Eser, "Thermal, Raman and Surface Area Studies of Microcoiled Carbon Fiber Synthesized by CVD Microwave System," *Mater. Chem. Phys.* **76**, 217-223, 2002.
14. R. N. Basu, O. Altin, M. J. Mayo, C. A. Randall and S. Eser, "Fugitive Carbon Deposition by CVD for Solid Oxide Fuel Cell Zirconia Electrolyte Fabrication," *J. Electrochem. Soc.* **148**, A506-A512, 2001.
15. O. Altin and S. Eser, "Analysis of Solid Deposits from Thermal Stressing of a JP-8 Fuel on Different Tube Surfaces in a Flow Reactor," *Ind. Eng. Chem. Res.* **40**, 596-603, 2001.
16. O. Altin and S. Eser, "Analysis of Solid Deposits from Thermal Stressing of a JP-8 Fuel on Different Superalloy Surfaces in a Flow Reactor," *Ind. Eng. Chem. Res.* **40**, 589-595, 2001.
17. S. Eser, O. Altin, and B. K. Pradhan, "Formation of Carbon Nanotubes from Jet Fuel on Superalloys at Moderate Temperature and High Pressure," *Carbon* **38**, 1512-1515, 2000.
18. O. Altin and S. Eser, "Characterization of Carbon Deposits from Jet Fuel on Inconel 600 and Inconel X Surfaces," *Ind. Eng. Chem. Res.* **39**, 642-645, 2000.
19. J. Yu and S. Eser, "Supercritical-Phase Thermal Decomposition of Binary Mixtures of Jet Fuel Model Compounds," *Fuel* **79**, 759-768, 2000.
20. S.A.Carabineiro, I.F. Silva, M. Klimkiewicz, and S. Eser, "In-Situ Techniques for Studying Deterioration of C/C Composite Aircraft Brakes by Catalytic Oxidation," *Mater. Corros.* **50**, 1-7, 1999.
21. J. Yu, and S. Eser, "Thermal Decomposition of Jet Fuel Model Compounds under Near-Critical and Supercritical Conditions: 2. Decalin and Tetralin," *Ind. Eng. Chem. Res.* **37**, 4601-4608, 1998.
22. J. Yu and S. Eser, "Thermal Decomposition of Jet Fuel Model Compounds under Near-Critical and Supercritical Conditions: 1. N-Butylbenzene and n-Butylcyclohexane," *Ind. Eng. Chem. Res.* **37**, 4591-4600, 1998.
23. I. F. Silva, C. Palma, M. Klimkiewicz, and S. Eser, "Kinetics, *in-situ* x-ray Diffraction, and Environmental Scanning Electron Microscopy of Activated Charcoal Gasification Catalyzed by Vanadium Oxide, Molybdenum Oxide and their Eutectic Alloy," *Carbon* **36**, 861-868, 1998.

24. I. F. Silva, M. Klimkiewicz, and S. Eser "An Environmental Scanning Electron Microscopy Study of Activated Charcoal Gasification Catalyzed by MoO₃ in Air and in Oxygen and by Eutectic Alloy of MoO₃ and V₂O₅ in Air," *Energy Fuels* **12**, 554–562, 1998.
25. J. Yu and S. Eser, "Kinetics of Supercritical-Phase Thermal Decomposition of C-10 to C-14 Normal Alkanes and Their Mixtures," *Ind. Eng. Chem. Res.* **36**, 585-591, 1997.
26. J. Yu and S. Eser, "Thermal Decomposition of C-10 to C-14 Normal Alkanes in Near-Critical and Supercritical Regions: Product Distributions and Reaction Mechanisms," *Ind. Eng. Chem. Res.* **36**, 574-584, 1997.
27. T. R. Filley, R. M. Filley, S. Eser, and K. H. Freeman, "Compound-Specific Isotope Analyses of Products from Carbonization of a FCC Decant Oil Doped with ¹³C-Enriched 4-Methyldibenzothiophene," *Energy Fuels* **11**, 637-646, 1997.
28. R. M. Filley and S. Eser, "Reactions of ¹³C Labeled 4-Methyldibenzothiophene Carbonized with FCC Decant Oils," *Energy Fuels* **11**, 631-636, 1997.
29. R. M. Filley and S. Eser, "Analysis of Hydrocarbons and Sulfur Compounds in FCC Decant Oils and their Carbonization Products," *Energy Fuels* **11**, 623-630, 1997.
30. K. Gergova and S. Eser, "Effects of Activation Method on the Pore Structure of Activated Carbons from Apricot Stones," *Carbon* **34**, 879-888, 1996.
31. S. Eser and L. Hou, "3-D ¹H NMR Imaging of Porosity in Calcined Needle Cokes," *Carbon* **34**, 805-807, 1996.
32. E. M. Yoon, L. Selvaraj, S. Eser, and M. M. Coleman, "High-Temperature Stabilizers for Jet Fuels and Similar Hydrocarbon Mixtures," *Energy Fuels* **10**, 812-815, 1996.
33. S. Eser, "Mesophase and Pyrolytic Carbon Formation in Aircraft Fuel Lines," *Carbon* **34**, 539-547, 1996.
34. K. Gergova, S. Eser, H. H. Schobert, M. Klimkiewicz, and P. Brown, "Environmental Scanning Electron Microscopy of Producing Activated Carbons from Anthracite," *Fuel* **74**, 1042-1048, 1995.
35. J. Yu and S. Eser, "Determination of Critical Properties of Some Jet Fuels," *Ind. Eng. Chem. Res.* **34**, 404-409, 1995.
36. N. Petrov, K. Gergova, and S. Eser, "Effect of Water Vapor on the Porous Structure of Activated Carbon from Lignite," *Fuel* **73**, 1197-1201, 1994.

37. K. Gergova, N. Petrov, and S. Eser, "Adsorption Properties and Microstructures of Activated Carbons Produced from Agricultural By-products by Steam Pyrolysis," *Carbon* **32**, 693-702, 1994.
38. T. Sasaki, R. G. Jenkins, S. Eser, and H. H. Schobert, "Carbonization of Anthracene and Phenanthrene II. Spectroscopy and Mechanisms," *Energy Fuels* **7**, 1047-1053, 1993.
39. T. Sasaki, R. G. Jenkins, S. Eser, and H. H. Schobert, "Carbonization of Anthracene and Phenanthrene I. Kinetics and Mesophase Development," *Energy Fuels* **7**, 1039-1046, 1993.
40. K. Gergova, S. Eser, and H. H. Schobert, "Preparation and Characterization of Activated Carbons from Anthracite," *Energy Fuels* **7**, 661-668, 1993.
41. C. Song, S. Eser, H. H. Schobert, and P.G. Hatcher, "Pyrolytic Degradation Studies of a Coal-Derived and a Petroleum-Derived Aviation Jet Fuel," *Energy Fuels* **7**, 234-243, 1993.
42. G. D. Cody, S. Eser, P. G. Hatcher, A. Davis, M. Sobkowiak, S. Shenoy, and P. C. Painter, "Temperature Dependence of the Swelling of Coals in Pyridine," *Energy Fuels* **6**, 716-719, 1992.
43. S. Eser, R. G. Jenkins, G. Wei, H. H. Schobert, and J. T. Joseph "High-Temperature Swelling of Coal/Tetralin Mixtures in A High-Pressure Microdilatometer," *Fuel* **70**, 1445-1455, 1991.
44. S. Eser and R. G. Jenkins, "Carbonization of Petroleum Feedstocks II: Chemical Constitution of the Feedstock Asphaltenes and Mesophase Development," *Carbon* **27**, 889-897, 1989.
45. S. Eser and R. G. Jenkins, "Carbonization of Petroleum Feedstocks I: Relationships Between Chemical Constitution of the Feedstocks and Mesophase Development," *Carbon* **27**, 877-887, 1989.
46. S. Eser, F. J. Derbyshire, and G. G. Karsner, "Improvement of Coke Texture by Thermal Pretreatment of Petroleum Residua," *Fuel* **68**, 1146-1151, 1989.
47. S. Eser, R. G. Jenkins, M. Malladi, and F. J. Derbyshire, "Carbonization of Coker Feedstocks and Their Fractions," *Carbon* **24**, 77-82, 1986.
48. A. Culfaz and S. Eser, "Yield and Composition of the Products from Pyrolysis of Solid Fuels," *Doga Bilim Dergisi* **9** (1), 1-11, 1985 (in Turkish).

Book Chapters

1. W. Scaroni, M.R. Khan, S. Eser, L. R. Radovic, "Coal Pyrolysis," In *Ullmann's Encyclopedia of Industrial Chemistry*, Vol. A7, 245-280, 1986.
2. A.W. Scaroni, M.R. Khan, S. Eser, L. R. Radovic, "Coal Pyrolysis," In *Handbook of Extractive Metallurgy*, Edited by F. Habashi, Wiley-VCH, Weinheim, 224-268, 1997.
3. S. Eser, "Carbonaceous Mesophase Formation and Molecular Composition of Petroleum Feedstocks," in *Supercarbon: Synthesis, Properties, and Applications*, S. Yoshimura and R. P. H. Chang Eds, Springer-Verlag, Berlin, 1998, pp.147-155.
4. S. Eser and J. Andresen, "Properties of Fuels, Petroleum Pitch, Petroleum Coke, and Carbon Materials," In *Fuels and Lubricants Handbook: Technology, Properties, Performance, and Testing*, Editors: George E. Totten; Rajesh J. Shah; Steven R. Westbrook, ASTM, 2003, pp. 757-786.
5. S. Eser, G. Wang, J. Clemons, "Molecular Constitution, Carbonization Reactivity and Mesophase Development From FCC Decant Oil and its Derivatives. " in *Heavy Hydrocarbon Resources: Characterization, Upgrading, and Utilization* Editors: Masakatsu Nomura, Parviz M. Rahimi and Omer Refa Koseoglu, ACS Symposium Series, No. 895; Oxford University Press, 2004, pp. 95-111.

SPEAKING ENGAGEMENTS (INVITED SEMINARS/PRESENTATIONS)

1. "Carbonaceous Mesophase - A Critically Important Intermediate Phase in the Formation of Solid Carbons," Chemistry Department Colloquium, SUNY, Binghamton, NY, January 1991.
2. "Coking of Petroleum Feedstocks: Shot, Sponge, or Needle Coke?" Amoco Research Center, Naperville, Illinois, January 1993.
3. "Carbonaceous Mesophase: A Bridge from Petroleum Feedstocks to Carbon Materials," Chemical Engineering Department, Middle East Technical University, Ankara, Turkey, June 1995.
4. "Relationships between Molecular Constitution of Coker Feedstocks and Optical Texture of Cokes," Conoco, Inc., Ponca City, Oklahoma, February 1996.
5. "Carbonization of Petroleum Feedstocks and Mesophase Development," Chemical and Metallurgical Engineering Department, Istanbul Technical University, Istanbul, Turkey, August 1996.

6. "Relationships between Molecular Composition of Coker Feedstocks and Resulting Coke Texture via Mesophase Development," Mobil Technology Company, Paulsboro, New Jersey, March 1998.
7. "Analysis of Coker Feedstocks and Characterization of Coke Texture and Porosity by Image Analysis," Conoco, Inc., Ponca City, OK, April 1998.
8. "Activated Carbon Preparation from Lignocellulosic Materials," Department of Chemical Engineering, Universidade Nova de Lisboa, Portugal, June 1998.
9. "Thermal Stability Concerns on Performance of Jet Fuel in Advanced Aircraft," Department of Chemical Engineering, Universidade Nova de Lisboa, Portugal, June 1998.
10. "Characterization of Solid Carbon Deposit on Metal and Metal Alloy Foils from Heating Hydrocarbons and Jet Fuel in a Flow Reactor," International Symposium on Functional Materials, Fukuoka, Japan, November 1998.
11. "Understanding Solid Carbon Formation and Deposition Mechanisms Through Polarized-Light and Scanning Electron Microscopy," Columbian Chemicals Company, Marietta, Georgia, January 1999.
12. "From Microstructure and Reactivity of Solid Carbons to Formation and Deposition Mechanisms," Center for Applied Energy Research, University of Kentucky, Lexington, Kentucky, May 1999.
13. "Solid Formation and Deposition from Thermal Stressing of Jet Fuel," Parker-Hannifin Corporation, Mentor, Ohio, August 1999.
14. "Thermal Stability of Jet fuel for Advanced Aircraft," Industry Boutique, 218th ACS National Meeting, New Orleans, Louisiana, August 1999.
15. "Characterization of Solid Deposits on Metal and Coated Surfaces," Parker-Hannifin Corporation, Glendale, Arizona, October 1999.
16. "Undesired Reactions of Carbon," Department of Chemical Engineering, Middle East Technical University, Ankara, Turkey, July 2000.
17. "A Laboratory-Scale Flow Reactor for Simulated Delayed Coking of Decant Oils," Keynote Lecture in Eurocarbon 2000, Berlin, July 2000.
18. "Analysis and Carbonization of Decant Oils and their Fractions," Unocal Chicago Carbon Company, Lemont, Illinois, August 30, 2001.
19. "Assessment of Active Learning," Transatlantic Education and Training Conference, Muenster, Germany, December 9-11, 2001.

20. "Solid Deposition from Jet Fuel Reactions on Heated Surface," Rolls Royce Corporation, Indianapolis, Indiana, February 26, 2002.
21. "Formation and Characterization of Carbonaceous Deposits from Jet Fuel Reactions on Heated Surfaces," Ethyl Corporation, Richmond, Virginia, July 29, 2002.
22. "Molecular Composition of Petroleum Heavy Feedstocks: Why Bother?" University of Petroleum, Dongying City, China, September 9, 2002.
23. "Upgrading of Petroleum Residua: Hydrogen Source or Sink?" University of Petroleum, Dongying City, China, September 10, 2002.
24. "From Petroleum Refining to Iron/Steel and Aluminum Manufacture: Carbonaceous Mesophase in Delayed Coking" University of Petroleum, Dongying City, China, September 11, 2002.
25. "Desired and Undesired Carbon Formation: A Fascinating Diversity in Structure and Properties," Dalian University of Technology, Dalian, China, September 14, 2002.
26. "Characterization of Carbonaceous Deposits from thermal Stressing of Jet Fuel and Deposition Mechanisms," Department of Chemistry and Biochemistry, Duquesne University, April 1, 2005.
27. "Solid Carbons: Hero or Villain?" Colloquium, Department of Energy and Geo-Environmental Engineering, Penn State, November 17, 2005.
28. "Solid Carbons: Hero or Villain?" Sabanci Üniversitesi, Faculty of Engineering and Natural Sciences Seminar, Istanbul, Turkey, August 10, 2006.
29. "A Literature Review on Surface Coating Processes," Rolls Royce LLC, Derby, England, June 27, 2007.
30. "Characterization of Deposits Formed on Diesel Injectors in Field Tests and from Thermal Oxidative Degradation of Jet Fuel & n-hexadecane in a Laboratory Reactor," Department of Chemistry and Biochemistry, Duquesne University, January 11, 2008.
31. "Renewable Energy," Energy Policy Speaker Series, Department of Energy and Mineral Engineering, Penn State University, February 1, 2008.
32. "Energy and Chemical Engineering," Department of Chemical Engineering, First-Year Seminar, Penn State University, February 28, 2008.
33. "Desired and Undesired Reactions of Hydrocarbons," BP International Ltd., Sunbury, England, September 29, 2008.

34. "An Overview of Petroleum Refining and Present/Future Challenges,"
Departamento de Ingeniería Química y Química Inorgánica, La Universidad de Cantabria, Spain, December 12, 2008.
35. "Catalysis of Undesirable Deposition and Undesirable Oxidation of Solid Carbons,"
Section of Chemical Engineering, Autónoma University of Madrid, Spain, January 9, 2009.
36. "Carbon Deposit Formation from Thermal Stressing of Petroleum Fuels," Innospec Limited, Cheshire, England, May 7, 2009.

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

<i>1. American Chemical Society</i>	Member	1986-present
Division of Fuel Chemistry	Member	1986-present
	Executive Committee	1997-present
	Chair, Membership	1997-2001
	2004 Program Chair	2002-2004
	Chair Elect	2005
	Chair	2006
	Past Chair	2007

- Received *Chempower 99* (ChemLuminary) award in the ACS Division Membership Contest on behalf of Fuel Chemistry Division, 218th ACS National Meeting, New Orleans, LA, 1999.
- Received ACS Innovative Projects Fund for Divisional Enhancement Award (\$5,000) for "Attracting Graduate and Undergraduate Students to Divisional Activities at ACS National Meetings," 2005.
- Received ACS Innovative Projects Fund for Divisional Enhancement Award (\$7,500) for "Public Education and Outreach for Basic Literacy on Energy and Fuel Issues," 2006.
- Received 2007 ChemLuminary Award for "Recognition of Innovation and Outstanding Service to Members of a Division" on behalf of the Fuel Chemistry Division, 2007.
- Organizer and chair of six topical symposia and two general papers symposia.

<i>New Analytical Techniques in Fuels Chemistry</i>	1997
<i>Residue Characterization and Upgrading</i>	1999

	<i>Symposium in Memory of Frank Derbyshire</i>		2000
	<i>Chemistry of Coke and Carbon Deposition in Fuel Systems and Process Units</i>		2004
	<i>Chemistry of Solid, Liquid and Gaseous Fuels (2)</i>		2004
	<i>Chemistry of Carbon Materials and Nano-materials</i>		2006
	<i>Alternative Hydrocarbons: Tar Sands, Oil Shale, and Heavy Oil: Production, Processing, and Chemistry</i>		2009
	Division of Petroleum Chemistry	Member	1992-present
	Division of Environmental Chemistry	Member	1993-present
2. American Carbon Society		Member	1983-present
Session Chairman			
<i>Carbonization 1</i>	19 th Biennial Conf. on Carbon, University Park, PA		1989
<i>Carbonization 2</i>	19 th Biennial Conf. on Carbon, University Park, PA		1989
Session Chairman			
<i>Thermal Processes</i>	European Carbon Conference, New Castle, UK		1996
Topical Area Coordinator			
<i>Carbonization, Mesophase, and Graphitization</i>	23 rd Biennial Conf. on Carbon, University Park, PA		1997
Session Chairman			
<i>Mesophase Formation</i>	23 rd Biennial Conf. on Carbon, University Park, PA		1997
Session Chairman			
<i>Adsorption</i>	23 rd Biennial Conf. on Carbon, University Park, PA		1997
Session Chairman			
<i>Activated Carbons 1</i>	Int. Symp. On Carbon, Tokyo, Japan		1998
<i>Activated Carbons 2</i>	Int. Symp. On Carbon, Tokyo, Japan		1998
Session Chairman			
<i>Mesophase, Carbonization, and Graphitization: Pitches</i>	24 th Biennial Carbon Conference, Charleston, SC		1999
Session Chairman			
<i>Adsorption and Surface Science</i>	International Conference on Carbon, Berlin, Germany		2000

Session Chairman <i>Carbonization</i>	Carbon 2001, International Conference on Carbon, Lexington, Kentucky	2001
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| 3. <i>American Institute of Chemical Engineers</i> | Member | 1998-present |
| 4. <i>American Society for Engineering Education</i> | Member | 1999-present |
| 5. <i>American Association for the Advancement of Science</i> | Member | 1999-present |
| 6. <i>Phi Kappa Phi</i> | Treasurer | 2006 - 2008 |

HONORS AND AWARDS

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| 1. PSU, College of Earth and Mineral Sciences | Wilson Award for Outstanding Teaching | 2001 |
| 2. ACS, Fuel Chemistry Division, | Outstanding Service | 1997, 2000, 2004 |
| 3. PSU, Dept. of Mat. Sci. & Eng. | Service Award | 1996 |
| 4. Phi Kappa Phi Honor Society | Member | since 1985 |
| 5. PSU Graduate Research Exhibition | Honorable Mention | 1986 |
| 6. METU, Chem. Eng. Department | High Honors | 1976-1978 |
| 7. METU, Chem. Eng. Department | Honors | 1971-1976 |
| 8. IAESTE Scholarship for summer training in Holland | | 1975 |
| 9. METU Ataturk Scholarship | | 1974 |