

CURRICULUM VITAE

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Personal information: Born in 1959, married, no children.

Languages: Turkish and English.

Education

- 1997 PhD** Yildiz Technical University (Istanbul/Turkey)
Heat-Process (Mechanical Engineering)
Thesis: *Investigation of Soot Formation in Industrial Flames*
- 1985 MSc** Yildiz Technical University (Istanbul, Turkey)
Mechanical Engineering
Thesis: *Chemical Recovery System in Pulp Production System with Alkali Method*
- 1982 BS** Hacettepe University, Zonguldak Engineering Faculty
Mechanical Engineering
Final Project: *Electric Arc and Induction Furnace*

Employment Experience

- **Assistant Professor**, Zonguldak Karaelmas University, February 1998 to date.
- **Lecturer**, Zonguldak Karaelmas University, November 1995 to February 1998.
- **Research Assistant**, Zonguldak Karaelmas University, Sept. 1983 to Nov. 1995.
- **Design and Inspection Engineer**, Ministry of National Defence (during military service), July 1985 to August 1986.

Teaching Experience

Undergraduate Level Courses

- 1) Computer Programming (3-credit Freshman course)
- 2) Electronics for Mechanical Engineers (3-credit Sophomore course)
- 3) Heat Transfer (3-credit Junior course)
- 4) Heating and Ventilation (3-credit Senior course)
- 5) Air Conditioning and Refrigeration (2-credit, elective Senior course)
- 6) Fuels and Combustion (2-credit, elective Senior course)

Graduate Level Courses

- 1) Mass Transfer (3 credits)
- 2) Advanced Heat Conduction (2 credits)
- 3) Design of Air Conditioning and Refrigeration Systems (3 credits)

Publications

Eyriboyun, M and Çalık K (2003), “Utilization of Waste Heat to Heating of Buildings of CATES (Catalagzi Thermal Power Plant)” (in Turkish), *Proceedings of 6th National Sanitary Engineering Congress and Exhibition*, Izmir, Turkey, pp. 395-410.

Eyriboyun M, Baycık H and Koltuk F (2003), “Building DBase for Recognition of Material from the Microstructure Images” (in Turkish), *Proceedings of International 12th Turkish Symposium on Artificial Intelligence and Neural Networks (TAINN'03)*, Volume:5, Onsekiz Mart University, Canakkale, Turkey, pp. 207-209.
(<http://www.ijci.org/product/tainn/T07009.pdf>)

Çalık K and **Eyriboyun M** (2003), “Economical Analysis of Water Source Heat Pumps: A Case Study” (in Turkish), *Proceedings of 14th National Heat Science and Technology Congress*, Konya, Turkey, pp. 162-167.

Çalık K, Zemher B, Kopaç M and **Eyriboyun M** (2001), “Optimization of Vapour Compressed Cooling Plant Using Exergy Analysis” (in Turkish), *Proceedings of 13th National Heat Science and Technology Congress*, Konya, Turkey, pp. 206-211.

Eyriboyun M and Heperkan H A (2000), “Calculation of Thermal Conductivity and Viscosity of Gas Mixtures”, *Recent Advances in Transport Phenomena: Proceedings of the 12th Int. Symp. on Transport Phenomena*, The Data Science Library, Elsevier, Amsterdam, pp. 465-469.

Eyriboyun M (2000), “Design Principles of Variable Refrigerant Volume (VRV) Air Conditioning Systems and a Sample Application” (in Turkish), *TermoKlima*, No. 92 (March issue) pp. 33-50.

(This paper was originally printed in the *Proceedings of 3rd. National Sanitary Engineering Congress and Exhibition*. Because of the editorial request of the periodical it has been republished in *TermoKlima*)

Eyriboyun M (1997), “Design Principles of Variable Refrigerant Volume (VRV) Air Conditioning Systems and A Sample Application” (in Turkish), *Proceedings of 3rd. National Sanitary Engineering Congress and Exhibition*, Vol. 2, Izmir, Turkey, pp. 603-616.

Eyriboyun M and Heperkan H A (1997), “Investigation of Propane (C₃H₈) Combustion in A Premixed Flat Flame” (in Turkish), *Proceedings of 11th National Heat Science and Technology Congress*, Vol. 1, Edirne, Turkey, pp. 556-565.

Bayrak A, **Eyriboyun M**, Pelin S (1997), “Development Of A Thermal Conductivity Meter To Determine The Thermal Conductivity Of Rocks” (in Turkish), *Proceedings of 20th Year Geology Symposium*, Selcuk University, Konya, Turkey, (not published yet).

Eyriboyun M, Kadı I and Heperkan H A (1996), “Computer Aided Measurement of Shock-Wave Velocity” (in Turkish), *Proceedings of Mechanical Engineering Papers*, Isparta, Turkey, pp. 91-95.

Eyriboyun M and Heperkan H A (1993), “Minimization of The Effective Reaction Mechanism in The Combustion of Methane” (in Turkish), *Proceedings of Third Combustion Symposium*, Bursa, Turkey, pp. 241-250.

Eyriboyun M and Heperkan H A (1991), “The Influence of The Stociometry on Soot Formation” (in Turkish), Proceedings of 8th National Heat Science and Technology Congress, Eskişehir, Turkey, pp. 347-358.

Other

Eyriboyun M (1998), “At The 75th Year of The Republic, Science and Mechanical Engineering Education in Turkey” (in Turkish), *Proceedings of Scientific Activity in Zonguldak Karaelmas University in 1998*, (For The Memorial of 75th Year of The Republic), Zonguldak, Turkey, pp. 313-319.

Eyriboyun M (2002), “Fundamentals in Photography”, *Unpublished course notes*, Zonguldak.

Projects

Eyriboyun M, Özkan T, Akçın N A, “Experimental Determination of Gas Discharge Velocity in Liquid Carbon Dioxide Exploding System”, Supported by TUBITAK (Scientific and Technical Research Council of Turkey) and TTK (Turkish Hardcoal Company), TUBITAK Project Code: MISAG 224, (Continued, July 2004).

Eyriboyun M, Çalık K, “Utilization of Waste Heat to Heating of Buildings of CATES (Catalagzi Thermal Power Plant)” Zonguldak Karaelmas University, Research Fund Project Code: 2002-45-02-07 (Continued, July 2004).

Bayrak A, **Eyriboyun M** and Pelin A, “Development of A Thermal Conductivity Meter to Determine the Thermal Conductivity of Rocks”, Zonguldak Karaelmas University, Research Fund Project Code: 95-115-001-15, 1997.

Scholarships & Awards

- NATO/ASI, Montréal University, Art and Science Faculty, Department of Mathematics and Statistics, Summer School supplement grant holder from July 9, 2001 to July 20, 2001.
- A group, comprising of myself and three students won second prize in a competition about heating, air-conditioning, ventilating and sanitation, held by Demirdokum Inc. Company, June 2000.
- JICA (Japan International Cooperation Agency), “Air-Conditioning Engineering Course” grant holder from August 5, 1996 to November 26, 1996.

Courses, Seminars and Conferences

- “Digital Image Processing, ZKU, Mechanical Engineering Department”, April 14, 2004, Zonguldak, Turkey. (Seminar)
- “The Age of Communication and Digital Liveliness”, Sergi Odasi (Private Art Gallery), October 18, 2003, Zonguldak, Turkey. (Conferance)
- “Cooling of Electronics Componenets by Finned Surfaces”, ZKU, Mechanical Engineering Department, July 2, 2003, Zonguldak, Turkey. (Seminar)
- Numerical Calculation of Shvab-Zel'dovich Energy and Species Equations by The Finite Difference Methode, ZKU, Mechanical Engineering Department, Marh 23, 2000, Zonguldak, Turkey. (Seminar)
- The Variation of Thermal Conductivity Through The Flat Methane Flame, ZKU, Mechanical Engineering Department, June 2, 1999, Zonguldak, Turkey. (Seminar)

- On/Off Control of The Electrical Appliance by Computer, ZKU, Mechanical Engineering Department, June 6, 1998, Zonguldak, Turkey. (Seminar)
- Heat Pumps; Their Economics and Environmental Aspect, ZKU, April 30, 2001, Zonguldak, Turkey. (Conferance)
- Web Pages Design and Publishing (Course for students), Zonguldak, Turkey. (Course)
- Practical Basic Electronics and Control through the Computer, ZKU, Mechanical Engineering Department, May-June, 2002, Zonguldak, Turkey. (Course for students and public. It has been realized 2 times.)
- Basic Photography, Zonguldak, Turkey. (Course for students and public. It has been realized 5 times.)

Programming skills

- Visual Basic & Quick Basic.
- Fortran Power Station 4.0, Fortran 90, MS Fortran 77.
- Windows XP, 2000, ME, 98, 95, DOS.

Other Activities

- Attended “Modern Methods in Sciencific Computing and Applications” NATO/ASI Summer School at Montréal University, Art and Science Faculty, Department of Mathematics and Statistics, July 9-20, 2001, Montréal, Canada.
- Attended “Short Course on Industrial Drying Technology: Principles & Applications”, organized by Ege University Mechanical Engineering Department and Ege University Solar Energy Enstitute, June 12-15, 2000, İzmir, Turkey.
- Attended “Air-Conditioning Engineering Course”, organized by JICA and conducted by DAIKIN Ind. Ltd., Agust 5, 1996 to November 26, 1996, Osaka, Japan.
- Constructed a shock tube exprimental set-up for measurement of speed of shock wave at Trisonic Research Center at Istanbul Technical University between 1994-1995, İstanbul, Turkey.
- Served in the military as an inspection engineer for heating & ventilation controls, air-condition, cooling and solar energy systems at Isparta, Denizli, Burdur and Antalya region in Turkey for 12 months between 1985-1986.
- Amateur photographer with a collection of over 4000 photos relating to world travel. Selections have been displayed at photographic exhibitions and presented at various slides shows in Turkey and Japan.

Memberships

- The Turkish Society of Heating, Ventilation, Air-Conditioning and Sanitary Engineers.
- The Turkish Society of Heat Science and Technology.
- Chamber of Mechanical Engineers of Turkey.
- The JICA (Japan Inernational Cooperation Agency) Alumni Association of Turkey.
- Zonguldak Culture and Education Foundation (Founding Member).
- The Zonguldak Branch of Association in Support of Contemporary Living (Founding Member).
- ZKU Alumni Society (Founding Member).

PhD Thesis: *Investigation of Soot Formation in Industrial Flames*

Summary

Soot appears as an intermediate product in combustion systems. C_2H_2 formation which plays an important role in soot initiation and the related soot yield has been investigated.

In order to determine the species concentration and the soot yield distribution in a one dimensional laminar flat flame, the governing equations have been solved numerically for the flow field using finite differences. The elementary reactions forming the proposed reaction mechanism have been taken from available literature. Polynomial coefficient to calculate the thermochemical properties, on the other hand, has been calculated using a computer code developed in FORTRAN 77. The results obtained from the calculated distribution of the species concentrations for acetylene and other hydrocarbons have been used to determine the soot yield.

Using the developed DUZALEV* and SOOT programs species concentration and the soot yield have been calculated for different equivalence ratios ($\Phi = 1.25, \dots, 1.95$) at a constant entrance temperature ($T_g = 298$ K) and different temperatures ($T_g = 298$ K, $\dots, 375$ K) at a constant equivalence ratio of $\Phi = 1.75$. It has been found that soot does not form for $\Phi = 1.25$ and that it increases with increasing Φ . For $\Phi = 1.75$, it has been determined that the soot yield decreases with increasing reactant entrance temperature.

If the acetylene concentration, flame temperature and the soot yield are considered together, the results show good agreement with literature.

In order to examine propane combustion experimentally and to evaluate the proposed reactions kinetics, a single pulse shock tube system has been designed and manufactured and experiments were performed for different equivalence ratios and varying temperatures ($T_5 = 1190$ K – 1450 K) behind the reflected shock wave. Due to problems encountered in the gas chromatography system, relevant results have not been established so far.

* **DUZALEV** means Flat Flame in Turkish.