CIRRICULUM VITAE & PUBLICATION LIST

Date of Statement **:** May 2020
Name **:** Altuğ
Surname : Şişman
Academic Degree : Prof. Dr.
Current Address: **:** Department of Physics & Astronomy,
(Visiting Professor) Room POL 18, Office no: 205, Uppsala University,
Lägerhyddsvägen 5, SE-752 37 Uppsala, Sweden.
Home Institute Address : Energy Institute,
Istanbul Technical University, 34469-Maslak, Istanbul, Turkey.
e-mails : altug.sisman@physics.uu.se sismanal@itu.edu.tr
altugsisman@yahoo.com
Phones: : Mobile: +46 (0)70 333 4998
ORCID ID **:** 0000-0002-7431-5115
SCOPUS ID **:** 6701635292

1. Education

Ph.D. 1998 : Nuclear Energy Institute, Istanbul Technical University (ITU)
M.Sc. 1991 : Nuclear Energy Institute, ITU
B.Sc. 1988 : Mechanical Engineering, ITU

2. Professional Experiences

Since 05/2018 :**Visiting Professor**, Department of Physics & Astronomy, Uppsala University, Uppsala, Sweden (on sabbatical leave from Istanbul Technical University)
03/2009-09/2019 : **Professor**, Energy Institute, ITU
06/2002-03/2009 : **Associate Professor**, Energy Institute, ITU
10/2002-10/2004 : **Visiting Scientist**, Institute for Thermodynamics, Technical University Berlin, Germany (on sabbatical leave from Istanbul Technical University)
12/1998-06/2002 : **Assistant Professor**, Nuclear Energy Institute, ITU
1990-1998 : **Research Assistant**, Nuclear Energy Institute, ITU

3. Administrative Activities

10/12/2009 – 04/05/2018 : ***Institute Director***, ITU Energy Institute
12/2009 - 05/2018 : ***Senate & Executive Board Members*** of Istanbul Tech. Univ.
10/2010 - 04/2011 : ***Initiation of Energy Technopark*** *(Turkey's First Thematic Technopark)*
05/2013 – 04/2018 : ***Executive board member*** **of** ITU NOVA Technology Transfer Office Corp.

10/12/2009 - 01/03/2010 : ***Foundation of Industrial Advisory Board of Energy Institute-ITU***

04/2010 - 07/2011 : ***Development of Working Models for University-Industry Cooperation:*** *Industrially Supported Research Assistantship, Industrially Supported Research Projects & Education*

03/2009 – 03/2012 : ***Founder & Executive Committee Member of Renewable Energy Platform of ITU and TUGIAD (Young Businessman Association of Turkey)***

01/2010 – 12/2016 : ***Executive Committee Member*** of ITU Sci. Res. Projects Board

05/2005 – 01/2009 : ***Vice Director***, ITU Energy Institute

05/2005 – 05/2018 : ***Executive Committee Member***, ITU Energy Institute

05/2005 – 05/2018 : ***Institute Committee Member***, ITU Energy Institute

02/2007 – 05/2018 : ***Member of PhD Qualification Committee*** of "Energy Science and Technology" Graduate Program, ITU Energy Institute

07/2005 - 05/2006 : ***Member of Strategic Planning Committee*** of ITU Energy Institute

03/2006 – 03/2009 : ***Member of ITU TRIGA Mark-II Reactor Safety Board***, ITU Energy Institute,

2001-2002 : ***Rector coordinator of ITU*** for automation of student affairs,

1999-2001 : ***Member of PhD Qualification Committee of Nuclear Technology Division***, ITU Nuclear Energy Institute

Other Initiatives, Activities and Responsibilities

10/2011-02/2012 : *Establishment of* ***Computational Nano Energy Laboratory***, ITU Energy Institute

04/2011-02/2012 : *Establishment of* ***Ground Source Heat Pump Test and Research Laboratory***, ITU Energy Institute

01/2009-05/2010 : *Establishment of* ***Battery Test and Research Laboratory*** ITU Energy Institute,

02/2009-11/2009 : *Establishment of* ***Cryogenic Technologies Laboratory***

2007-2008 : *Design and realization of a* ***wind-solar-hydrogen hybrid power system***, ITU Energy Institute,

2006-2009 : *Establishment of* ***Renewable Energy Technologies and Signal Processing Laboratory***, ITU Energy Institute

2006-2007 : *Establishment of* ***Neutron Activation Laboratory***

2005-2006 : ***Re-construction of ITU Triga Mark-II Reactor Building***, ITU Energy Institute

05/2005-04/2010 : ***Technical Editor*** for ITU Journal, Engineering Volume,

12/2005 – 12/2008 : ***Assoc. Sec. Gen.*** of Int. Centre for Applied Thermodynamics

2005-2018 and 1990-98 : ***Electronic Test and Calibration of ITU TRIGA Mark-II Reactor***, ITU Energy Institute,

1996-1998 : ***Nuclear Reactor Operator*** of ITU TRIGA MARK-II reactor

1992-1993 : ***Design and establishment of a computerized data acquisition system*** *for ITU TRIGA MARK-II.*

4. Courses (the last 10 years)

Under "*Energy Science and Technology Graduate Program*", Energy Institute of ITU

- Quantum size effects on thermodynamic and transport properties: *Special Topics in Energy Science and Technology*
- Photo voltaic power systems
- Measurement technics in energy systems
- Advanced thermodynamics
- Direct energy conversion
- Heat & mass transfer (under Bahçeşehir University, Energy Systems Engineering program)
- Fuel cells

5. Research Interests

- Nano scale thermodynamic and transport behaviors of confined systems (quantum size and shape effects for nano scale energy conversion)
- Ground source heat pump technologies
- Electrochemical impedance spectroscopy for SOC and SOH monitoring of electrochemical batteries
- Thermoelectric devices
- Nuclear instrumentation
- Relativistic thermodynamics

6. Referee for International Journals (in alphabetical order)

- Annals of Physics
- Applied Energy
- Applied Thermal Engineering
- Exergy-An International Journal
- Heat and Mass Transfer
- International Journal of Energy Research
- International Journal of Exergy
- International Journal of Thermal Sciences
- Mathematical and Computer Modeling
- Journal of Micromechanics and Microengineering
- Journal of Physics A: Mathematical and General
- Journal of Physics D: Applied Physics
- Measurement Science and Technology
- Nanotechnology
- Naturwissenschaften
- Physica A
- Physica Scripta
- Physics Letters A

7. <u>Supervised Graduate Thesis Completed</u> (Total financial support supplied for supervised graduate students: 281 man x months for 19 students)

Ph.D. Theses

1. On the compatibility of electric equivalent circuit models for enhanced flooded lead acid batteries based on electrochemical impedance spectroscopy, (Can Aksakal, 2018)
2. Thermoelectric and Thermosize potentials under quantum size effects, (Sevan Karabetoglu, 2017)
3. Optimization of ground heat exchangers for ground source heat pumps, (Murat Aydın, 2015)
4. Thermosize Effects, (Gülru Babaç, 2012)
5. Quantum size effects on thermodynamic behaviors of gases, (Coşkun Fırat, 2007)
6. Quantum size effects on nano gas transport, (Z.Fatih Öztürk, 2007)

M.Sc. Theses

1. Optimum design of helix ground heat exchangers for heat pump applications (Babak Dehghan, 2015)
2. On The Discrete Nature of Thermodynamics (Alhun Aydın, 2014)
3. Experimental and Computational Examinations of effect of Distance Between Boreholes on the performance of Ground Source Heat Pumps, (Ahmet Gültekin, 2014)
4. An experimental investigation for the effects of direct contact heat exchangers on the performance of thermoelectric coolers (Murat Ferhat Doğdu, 2013)
5. Characterization and modeling of thermoelectric coolers (Türker Şahin, 2012)
6. Thermal modeling and experimental analysis of GSM base stations for improvement of energy efficiency (Cem Gürses, 2012)
7. Design, implementation and test of a real site performance measurement for photovoltaic modules (Kerem Turhan, 2011)
8. Electrical characterization and performance measurement of a vanadium-redox flow battery (Kenan Kılavuz, 2011)
9. Modeling the thermodynamic properties of monatomic and diatomic gases at cryogenic temperatures (Sevan Karabetoglu, 2010)
10. Investigation of the effects of operating and design conditions on maximum power output of a low pressure Tesla turbine (Bedrettin Duman, 2010)
11. Mathematical and experimental characterization a small-scale low pressure Tesla turbine (Fazlı Nalcı, 2010)
12. Design, production and performance measurement of a thermoelectric generator driven by liquid nitrogen (Anıl Ünsaç, 2010)
13. Theoretical and experimental characterization of thermoelectric generators at very low temperatures, (Haluk Özgün, 2009)
14. 2D modeling of a PEM fuel cell for variable water concentrations of membrane, (Nilay Unutulmaz, 2009)
15. 2D steady-state mathematical modeling of a PEM fuel cell, (Murat Aydın, 2007)
16. Thermal analysis and optimization of a liquid hydrogen vessels, (Tolga Çimen, 2006)
17. Analysis of the cooling problem of ITU TRIGA Mark-II reactor and suggestions for the solution, (Orhan Erdal Akay, 1999).

8. <u>Scientific Research and Development Projects Supervised</u> (Total budget: 5.537.500 $)

1. *Project Title* : **Development of system and software for radiation sensing and measurement (personal, field and panel detectors)**
   Supported by : Ministry of Development
   Budget *:* 5.000.000 TL (1.250 000 $)
   Dates : January 2018/ June 2019
   Responsibility : Project manager

2. *Project Title* : **Modernization of ITU Triga Mark-II nuclear research reactor**
   Supported by : Ministry of Development
   Budget *:* 6.000.000 TL (3.000 000 $) + Supp. budget. 1.500.000 TL (450.000 $)
   Dates : July 2014/ Dec 2016. + Jan 2017 / Jan 2018
   Responsibility : Project manager

3. *Project Title* : **A prototype development of a ground source heat pump and performance improvement of heat exchange between ground and heat pump**
   Supported by : Baymak Corp. and Ministry of Science, Technology and Industry
   Budget *:* 350.000 TL (200 000 $)
   Dates : Oct 2012/ Oct 2014.
   Responsibility : Project manager

4. *Project Title* : **A prototype development of a ground source heat pump and establishment of heat pump performance measurement laboratory**
   Supported by : Baymak Corp.
   Budget *:* 200.000 TL (111 000 $)
   Dates : April 2011/ December 2012.
   Responsibility *: Project manager*

5. *Project Title* : **Design and development of thermoelectric coolers with direct fluid contact thin film flow heat exchangers and pulse width modulation power control**
   Supported by : Drotel Corp.
   Budget *:* 150.000 TL (88 000 $)
   Dates : Nov 2011/ Nov 2013.
   Responsibility : Project manager

6. *Project Title* : **Performance analysis and characterization of a Vanadium redox flow battery**
   Supported by : Ericom Telecommunication Corp.
   Budget *:* 135 000 TL (90 000 $)
   Dates : January 2010/ June 2011.
   Responsibility : Project manager

7. *Project Title* : **Design and characterization of a battery cooler and SOC monitoring system**
   Supported by : Ericom Telecommunication Corp.
   Budget *:* 105 000 TL (70 000 $)
   Dates : January 2010/ January 2012.
   Responsibility : Project manager

8. *Project Title* : **State of health (SOH) and state of charge (SOC) monitoring for lead acid batteries by impedance analysis method**
   Supported by : İnci Akü San. & Tic. AŞ and Ministry of Industry and Trade
   Budget : 298 906 TL (200 000 $)
   Dates : September 2010/ September 2012.
   Responsibility : Project manager

9. *Project Title* : **Theoretical and experimental characterization of mechanic and thermoelectric processes for cryogenic power production**
   Supported by : ITU BAP & Ericom Telecommunication Corp.
   Budget : 40 000 TL (27 000 $)
   Dates : September 2008/ September 2010.
   Responsibility : Project manager

10. *Project Title* : **The effect of quantum surface energy on thermodynamic and transport properties of gases and geometric structure of state-space in nano-scale,**
    Supported by : TÜBİTAK (The Scientific and Technological Research Council of Turkey), under the contract no: 105T086.
    Budget : 57 420 TL (38 000 $)
    Dates : November 2005/ May 2007.
    Responsibility : Project manager

11. *Project Title* : **Thermodynamic analysis of gas cycles working with ideal quantum gases**
    Supported by : ITU Research Foundation, under the contract no: 1330.
    Budget : 20 000 TL (13.500 $)
    Dates : 23 December 1999/ 23 June 2002.
    Responsibility : Project manager

12. *Project Title* : **Research and development studies at ITU TRIGA MARK-II reactor**
    Supported by : ITU Research Foundation, under the contract no: 280.
    Budget : N/A
    Dates : February 1992/ September 1993.
    Responsibility : Researcher

9. <u>Industrial Application Projects Supervised</u> (Total budget: 881.000 $)

1. *Project Title* : **Design and application of a stratospheric balloon for HD video capture and some physical quantity measurements**
Supported by : Ülker Corp.
Budget : 700 000 TL (350 000 $)
Dates : April 2013/ April 2014.
Responsibility : Project manager

2. *Project Title* : **Design and application of a pyrolysis reactor for expired chocolates**
Supported by : Ülker Corp.
Budget : 472 000 TL (270 000 $)
Dates : January 2012/ July 2012.
Responsibility : Project manager

3. *Project Title* : **Design and application of micro power plant based on electrical bicycles**
Supported by : Ülker Corp.
Budget *:* 168 000 TL (96 000 $)
Dates : March 2011/ November 2011.
Responsibility : Project manager

4. *Project Title* : **Installation of a 30 kW wind turbine prototype**
Supported by : Permosan Energy and Engine Corp.
Budget *:* 210 000 TL (140 000 $)
Dates : March 2009/ July 2010.
Responsibility : Project manager

5. *Project Title* : **Installation of a test and research laboratory for small scale wind turbines**
Supported by : Permosan Energy and Engine Corp.
Budget *:* 30 000 TL (20 000 $)
Dates : March 2009/ July 2010.
Responsibility *: Project manager*

There are also technical projects for revolving funds with the total budget: 210.000 $

10. Consultancy

- 2008-2009: Energy consultancy for Akis Group Energy Corporation,
- 1998-1999: Consultant of Darussafaka College for the research project competition between the colleges (at the field of physics), organized by The Scientific and Technical Research Council of Turkey (TUBITAK). Projects and Awards are as follows:
    - An Electromagnetic Gun to Drive a Projectile , Second Place Award
    - A Thermoacoustic Refrigerator, Third Place Award
    - A MagnetoHydroDynamic Marine Engine, Third Place Award
    - An Ionic Vacuum Pump, Encouragement Award

11. Other Activities

Training Courses for Industrial and Trading Companies

1. (Together with Business Management Institute-BMI), "*Renewable energy technologies*", April 2011, October 2011, March 2012, May 2012, November 2012, April 2013, Istanbul Technical University, Energy Institute.
2. (Together with Fotoelektron company), "*Solar Photovoltaic Systems, Modeling, Installation and Analysis*", 10-11 April 2009, Istanbul Technical University, Suleyman Demirel Cultural Center.

Conference Organization

- *School & Workshop on Quantum and Nano Thermodynamics*, 27-29 September 2018, Uppsala University & Istanbul Technical University, Uppsala, Sweden.
- *Workshop on Quantum and Nano Thermodynamics*, 6-8 September 2017, Istanbul Technical University, Energy Institute, Istanbul.
- *International Raw Materials and Energy Summit*, 27-30 September 2017, Istanbul Hilton Bosporus Convention Center, Istanbul.
- *International Raw Materials and Energy Summit*, 1-3 October 2015, Istanbul Hilton Bosporus Convention Center, Istanbul.
- *University-Industry Cooperation for New Energy Technologies Summit*, 1 March 2010, Maslak, ITU campus, Istanbul.
- *Conference on Investment Opportunities for Renewable Energy*, 29 April 2009, Maslak, , ITU campus, Istanbul.
- ENKÜS-2007, *Workshop on Public-University-Industry Cooperation for Energy*, 06-07 December 2007, Maslak, ITU campus, Istanbul.
- ENKÜS-2006, *Workshop on Public-University-Industry Cooperation for Energy*, 22-23 June 2006, Maslak, ITU campus, Istanbul.
- ECOS-2001 (*Efficiency, Costs, Optimization, Simulations and Environmental Impact of Energy Systems*), 4-6 July, 2001, Istanbul Technical University, Mechanical Engineering Department, Gumussuyu-Istanbul, Turkey.

12. Papers published in peer reviewed international journals (#46)

A Sisman is the corresponding author in the 40 of the following journal articles.

Total cites: **756/644** (112 self cites)
h-index: **17** , i10-index: **22** (Source: Web of Science, as of March 2020)
Cites/Article: **17.2**
Average cites per year: **32**

1. **A. Sisman**, A. Aydin, J. Fransson, "Thermoshape effect for energy harvesting with nanostructures", Journal of Physics D: Applied Physics, (2020). (accepted for publication).
2. A. Aydin, **A. Sisman**, R. Kosloff, "Landauer's Principle in a Quantum Szilard Engine without Maxwell's Demon", Entropy, **22**, doi:10.3390/e22030294 (2020)
3. A. Aydin, J. Fransson, **A. Sisman**, "Thermosize voltage induced in a ballistic graphene nanoribbon junction", Journal of Applied Physics, **126**, 104302, (2019). (Editor's pick).
4. A. Aydin, **A. Sisman**, "Quantum shape effects and novel thermodynamic behaviors at nanoscale", Physics Letters A, **383** (7), pp. 655-665, (2019)
5. A. Aydin, T. Oikonomou, G.B. Bagci, **A. Sisman**, "Discrete and Weyl density of states for photonic dispersion relation", Physica Scripta, doi.org/10.1088/1402-4896/ab0bc5, (2019)

6. A: Gultekin, M. Aydin, **A. Sisman**, "Effects of arrangement geometry and number of boreholes on thermal interaction coefficient of multi-borehole heat exchangers", Applied Energy, **237**, pp.163-170, (2019)
7. M. Aydin, M. Onur, **A. Sisman**, "A new method for analysis of constant-temperature thermal response tests", Geothermics, **87**, pp.1-8, (2019)
8. C. Firat, **A. Sisman**, A. Aydin, "Characterization of density oscillations in confined and degenerate Fermi gases", J. Modern Physics B, **32**, 1850393, (2018)
9. A. Aydin and **A. Sisman**, "Quantum oscillations in confined and degenerate Fermi gases. II. The phase diagram and applications of half-vicinity model*",* Physics Letters A, **382**, pp. 1813-1817, (2018)
10. A. Aydin and **A. Sisman**, "*Quantum oscillations in confined and degenerate Fermi gases. I. Half-vicinity model*", Physics Letters A, **382**, pp. 1807-1812, (2018)
11. C. Aksakal and **A. Sisman**, "*On the Compatibility of Electric Equivalent Circuit Models for Enhanced Flooded Lead Acid Batteries Based on Electrochemical Impedance Spectroscopy*", Energies, 11(1), pp. 118, (2018)
12. S. Karabetoglu and **A. Sisman**, "*Thermosize effects in semiconductors"*, Physics Letters A, **381**, pp.2704-2708, (2017)
13. B. Dehghan, **A. Sisman** and M. Aydin, "*Parametric investigation of helical ground heat exchangers for heat pump applications*", Energy and Buildings, **127**, pp.999-1007, (2016)
14. A. Gultekin, M. Aydin and **A. Sisman**, "*Thermal performance analysis of multiple borehole heat exchangers*", Energy Conversion and Management, **122**, pp.544-551, (2016)
15. A. Aydin and **A. Sisman**, "*Discrete Density of States*", Physics Letters A, **380**, pp.1236-1240, (2016)
16. S. Karabetoglu, **A. Sisman** and Z.F. Ozturk, "*An analytical solution for quantum size effects on Seebeck coefficient*", Physica Scripta, **91**, 035803, (2016)
17. M. Aydin and **A. Sisman**, "*Experimental and computational investigation of multi U-tube boreholes*", Applied Energy, **145**, pp. 163-171, (2015)
18. A. Aydin and **A. Sisman**, "*Dimensional transitions in thermodynamic properties of ideal Maxwell-Boltzmann gases*", Phys. Scr., **90**, 045208, (2015)
19. A. Aydin and **A. Sisman**, "*Discrete Nature of Thermodynamics in Confined Ideal Fermi Gases*", Physics Letters A, **378**, pp.2001-2007, (2014)
20. C. Firat and **A. Sisman**, "*Quantum Forces of a gas confined in nano structures*", Physica Scripta, **87**, 045008 (5pp), (2013)
21. S. Karabetoğlu, **A. Sisman**, Z.F.Ozturk and T. Sahin, "*Characterization of a thermoelectric generator at low temperatures*", Energy Conversion and Management, **62** pp.47-50, (2012)
22. **A. Sisman** and G. Babac, "*Quantum Size Effects on Classical Thermosize Effects*", Continuum Mechanics & Thermodynamics, **24** pp.339-346, (2012)

23. G. Babaç and **A. Sisman**, "*Classical thermosize effects in degenerate quantum gases*", J. Computational and Theoretical Nanoscience, **8** (11) pp.1-4, (2011)

24. G. Babaç and **A. Sisman**, "*Thermodynamic cycles based on classical thermosize effects*", J. Computational and Theoretical Nanoscience, **8** (9) pp.1-7, (2011)

25. C. Firat, **A. Sisman** and Z.F. Ozturk, "*Effects of Particle-Wall Interactions on the Thermodynamic Behavior of Gases at the Nano Scale*", Int. J. Thermodynamics, **14,** 4, pp.155-161, (2011)

26. Z.F. Ozturk, **A. Sisman** and C. Firat, "*Quantum Effects on Gas Diffusion at the Nano Scale*", Int. J. Thermodynamics, **14,** 4, pp.163-166, (2011)

27. C. Firat, **A. Sisman** and Z.F. Ozturk, "*Thermodynamics of gases in nano cavities*", Energy, **35**, 814-819, (2010)

28. Z. F. Ozturk and **A.Sisman**, "Quantum size effects on thermal and potential conductivities of ideal gases", Physica Scripta, **80**, 065402 (2009)

29. G. Babac, **A. Sisman** and T. Cimen, "*Two-dimensional thermal analysis of liquid hydrogen tank insulation*", Int.J. Hydrogen Energy, **34**, 6357-6363, (2009)

30. C. Fırat, **A. Şişman**, "*Universality of the quantum boundary layer for a Maxwellian gas"*, Physica Scripta, **79**, 065002 (5pp), (2009)

31. **A. Şişman**, Z.F.Öztürk and C.Fırat, *"Quantum boundary layer: a non-uniform density distribution of an ideal gas in thermodynamic equilibrium"*, Physics Letters A, **362**, 16-20 (2007).

32. **A. Şişman** and I. Muller, *"The Casimir-like size effects in ideal gases"*, Physics Letters A, **320**, 360-366, (2004).

33. **A. Şişman**, "*Surface dependence in thermodynamics of ideal gases*", J. Phys. A: Math. Gen. **37**, 11353-11361, (2004).

34. **A. Şişman** and H. Saygın, "*Re-optimisation of Otto power cycles working with ideal quantum gases*", Phys. Scr., **64** (2), 108-112 (2001).

35. H. Saygın and **A.Şişman**, "*Quantum Degeneracy Effect on the Work Output from A Stirling Cycle"*, J. Appl. Phys., **90** (6), pp. 3086- 3089, 15 September (2001).

36. **A. Şişman** and H. Saygın, "*The efficiency analyses of a Stirling power cycle under the quantum degeneracy conditions*", Phys. Scr. **63** (4), 263-267 (2001).

37. **A. Şişman** and H. Saygın, "*The improvement effect of quantum degeneracy on the work of Carnot cycle*", Appl. Energy **68** (4), 367-376 (2001).

38. H. Saygın and **A. Şişman**, "*Joule-Thomson Coefficients of quantum ideal gases*", Appl. Energy; **70** (1), 49-57 (2001).

39. H. Saygın and **A. Şişman**, "*Brayton refrigeration cycle working at quantum degeneracy conditions*", Appl. Energy; **69** (2), 77-85 (2001).

40. **A. Şişman**, "*On The Upper Limit for Surface Temperature of a Static and Spherical Body"*, Int. J. Mod Phys. D, **9** (2), 215-225, (2000).

41. **A. Şişman** and H. Saygın**,** "*On The Power Cycles Working with The Ideal Quantum Gases-I: The Ericson Cycle*", J. Phys. D: Appl. Phys., **32**, 664-670, (1999).

42. **A. Şişman,** "*High Temperature Corrections For The Classical Expressions Of Radiative Losses From A Black-Body*", Can. J. Phys., **77**(5), 343-351, (1999).

43. H. Saygın, **A. Şişman**, T. Büke, "*A Comparison Between the Results of Perturbation Theory and TRIGAP for the Reactivity Worth Calculations of Fuel Elements*", Ann. Nucl. Energy, **25** (14), 1133-1140, (1998).

44. A. Durmayaz, **A. Şişman**, F. Çetin, H. Yavuz, "*Xenon Poisoning Method for the Determination of the Average Thermal Neutron Flux, Macroscopic Fission and Total Absorption Cross Sections*", Kerntechnick, **62** (5-6), 245-248, (1997).

45. **A. Şişman**, H. Yavuz, "*The Contribution of Thermal Electron-Positron Pairs to the Thermodynamic Properties of Black-Body Radiation*", J. Phys. A:Math.Gen., **28** (20), 5729-5735, (1995).

46. **A. Şişman**, H. Yavuz, "*The Effect of Joule Losses on The Total Efficiency of A Thermoelectric Power Cycle*", Energy, **20** (6), 573-576, (1995).

13. International Conference Papers (#64)

Papers Published in International Conference Proceedings (#46)

1. A. Aydin, **A. Sisman** and ZF. Ozturk, "*Confinement effects on radiative heat transfer*", The 29th International Symposium on Transport Phenomena (ISTP29), 30 October - 2 November, 2018, Honolulu, (USA)

2. A. Gultekin, M. Aydin and **A. Sisman**, "*An investigation on thermal interaction coefficient for multiple borehole heat exchangers*", Proceedings of 12nd IEA Heat Pump Conference, May 15-18, 2017, Rotterdam, (Netherlands)

3. M. Aydin, A. Gultekin and **A. Sisman**, "*The effects of test temperature and duration on the results of constant temperature thermal response test*", Proceedings of 12nd IEA Heat Pump Conference, May 15-18, 2017, Rotterdam, (Netherlands)

4. M. Aydin, M. Onur and **A. Sisman**, "*A new method for constant temperature thermal response tests*", Proceedings of 42nd Stanford Geothermal Workshop, Stanford University, February 13-15, 2017, Stanford/California, (USA)

5. G. Babac, Z. F. Ozturk and **A. Sisman**, "*Quantum degeneracy effect on gas diffusion*", 30th International Symposium on rarified gas dynamics, Univ. of Victoria, 10-15 July 2016, Victoria (Canada)

6. M. Aydın, **A. Sisman**, A. Gultekin and B. Dehghan, "*An experimental performance comparison between different shallow ground heat exchangers*", Proceedings of World Geothermal Congress (WGC) 2015, April 19-24 2015, Melbourne, (Australia)

7. B. Dehghan, **A. Sisman** and M. Aydın, "*Long Term Performance Prediction of a Borehole Ground Heat Exchanger by Green's Function Method*", Proceedings of World Geothermal Congress (WGC) 2015, April 19-24 2015, Melbourne, (Australia)

8. B. Dehghan, **A. Sisman** and M. Aydın, "*Optimizing the Distance between Boreholes with Helical Shaped Ground Heat Exchanger*", Proceedings of World Geothermal Congress (WGC) 2015, April 19-24 2015, Melbourne, (Australia)

9. M. Aydın, **A. Sisman**, A. Gultekin, S. Dincer and C. Erdogan, "*Experimental measurement and long term predictions of a multi-U tube borehole performance for ground source heat pumps*", Proceedings of 11th International Energy Agency (IEA) Heat Pump Conference 2014, May 12-16 2014, Montréal/Québec, (Canada)

10. A. Gultekin, M. Aydın, **A. Sisman**, S. Dincer and C. Erdogan, "*An experimental investigation of the effects of some design and operational parameters on heat transfer rate per unit borehole length*", Proceedings of 11th International Energy Agency (IEA) Heat Pump Conference 2014, May 12-16 2014, Montréal/Québec, (Canada)

11. M. Aydin, **A. Sisman** and A. Gultekin, "*Long Term Performance Prediction of a Borehole and Determination of Optimal Thermal Response Test Duration*", Proceedings of 39th Workshop on Geothermal Reservoir Engineering, Stanford University, February 24-26, 2014, Stanford/California, (USA)

12. A. Gultekin, M. Aydin and **A. Sisman**, "*Determination of Optimal Distance Between Boreholes*", Proceedings of 39th Workshop on Geothermal Reservoir Engineering, Stanford University, February 24-26, 2014, Stanford/California, (USA)

13. A. Aydin and **A. Sisman**, "*Dimensional Transition Point in Thermodynamic Properties of Maxwell-Boltzmann Gases*", Proceedings of 4th International Conference on Statistical Physics (SigmaPhi '14), July 7-11, 2014, Rhodes, (Greece).

14. A. Aydin and **A. Sisman**, "*Discrete nature of thermodynamic properties*", 12th Joint European Thermodynamics Conference, July 1-5, 2013, Brescia, (Italy).

15. S. Karabetoglu and **A. Sisman**, "*Dimensional transitions in thermodynamic properties*", 12th Joint European Thermodynamics Conference, July 1-5, 2013, Brescia, (Italy).

16. **A. Sisman**, Z.F. Ozturk, C. Firat and G. Babac, "*Thermodynamic under quantum size effects*", 12th Joint European Thermodynamics Conference, July 1-5, 2013, Brescia, (Italy) (invited speaker).

17. Z.F. Ozturk, **A. Sisman** and S. Karabetoglu, "*Quantum confinement effects on Seebeck coefficient*", 12th Joint European Thermodynamics Conference, July 1-5, 2013, Brescia, (Italy).

18. G. Babac, **A. Sisman** and Z.F. Ozturk, "*Quantum size and degeneracy effects on thermal self-diffusion under free molecular transport regime*", 12th Joint European Thermodynamics Conference, July 1-5, 2013, Brescia, (Italy).

19. S. Karabetoglu, T. Sahin, **A. Sisman** and Ozturk. Z.F., "*Modelling, design and experimental characterization of a thermoelectric cooler*", ECOS 2011, 24rd

International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 4-7 July 2011, Novi Sad, (Serbia)

20. S. Karabetoglu, **A. Sisman**, Ozturk. Z.F. and T. Sahin, "*Characterization of a thermoelectric generator at low temperatures*", ECOS 2011, 24rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 4-7 July 2011, Novi Sad, (Serbia)

21. G. Babac and **A. Sisman**, "*Classical Thermosize Effects for Bose Gases*", ECOS 2011, 24rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 4-7 July 2011, Novi Sad, (Serbia)

22. C. Firat and **A. Sisman**, "*Lateral forces in gases at nano scale*", Asia Pacific Conference on Sustainable Energy & Environmental Technologies (APCSEET 2011), 10−13 July 2011, Adelaide, (Australia)

23. **A. Şişman**, *"Thermodynamics at the nano scale*", ECOS 2010, 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 14-17 June 2010, Lausanne, (Switzerland)

24. G. Babaç and **A. Şişman**, "*A Mesoscale Power Cycle Based on Classical Thermosize Effects*", ECOS 2010, 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 14-17 June 2010, Lausanne, (Switzerland)

25. Z.F. Ozturk and **A. Şişman**, "*Gas diffusion in nano scale*", ECOS 2010, 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 14-17 June 2010, Lausanne, (Switzerland)

26. C. Firat and **A. Şişman**, "*Effects of Particle-Wall Interactions on Thermodynamic Behaviors of Gases in Nano Scale*", ECOS 2010, 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 14-17 June 2010, Lausanne, (Switzerland)

27. **A. Şişman**, C. Firat and Z.F. Öztürk, "*Inhomogenous density distributions of ideal gases in nano structures*", 10. Joint European Thermodynamics Conference, 22-24 June, 2009, Kopenhagen, (Denmark).

28. Z.F. Öztürk and **A. Şişman**, *"Quantum size effects on self-thermal diffusion of gases",* 10. Joint European Thermodynamics Conference, 22-24 June, 2009, Kopenhagen, (Denmark).

29. G. Babaç and **A. Şişman**, *"Thermosize effects and thermodynamic analysis of a thermosize power cycle",* 10. Joint European Thermodynamics Conference, 22-24 June, 2009, Kopenhagen, (Denmark).

30. G. Babaç, H. Özgün, **A. Sisman**, "*Theoretical and Experimental Characterizations of Thermoelectric Modules at Cryogenic Temperature*", ICT2009&ECT2009, The 28th International Conference on Thermoelectrics and The 7th European Conference on Thermoelectrics, 26-30 July, 2009, Freiburg, (Germany)

31. **A. Şişman**, Z.F. Öztürk and C. Firat , "*Quantum size effects on gas diffusion in nano-scale: an isotopic enrichment possibility for light elements*", The 19th International Symposium on Transport Phenomena, 17-20 August, 2008, Reykjavik, (Iceland).

32. Z.F. Ozturk, **A. Sisman**, "*Violation of the Wiedemann-Franz Law in Nano-scale*", The 19th International Symposium on Transport Phenomena, 17-20 August, 2008, Reykjavik, (Iceland).

33. C. Firat, **A. Sisman** and Z. F. Ozturk, "*Thermodynamics of Gases in Nano Cavities*", ECOS 2008, 21st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 24-27 June 2008, (Poland).

34. Gülru Babaç, **A. Sisman** , "*2D Thermal Model of a Liquid Hydrogen Tank with Double Vapor Cooled Shields*", The 17th World Hydrogen Energy Conference, 15-19 June 2008 Brisbane, Queensland (Australia).

35. M. Aydın and **A. Şişman**, "*2D Modelling of a PEM Fuel Cell*", Proceedings of IHEC2007 (International Hydrogen Energy Congress and Exhibition 2007), 13-15 July 2007, Istanbul, (Turkey).

36. T. Çimen, G. Babaç and **A.Şişman**, "*Thermal Analysis and Optimum Design of a Liquid Hydrogen Tank*", Proceedings of IHEC2007 (International Hydrogen Energy Congress and Exhibition 2007), 13-15 July 2007, Istanbul, (Turkey).

37. C. Fırat and **A.Şişman**, *"Quantum surface energy and lateral forces in ideal gases"*, Joint European Thermodynamics Conference IX (JETC IX), pp: 68-74, 12-15 June 2007, Ecole nationale supérieure des mines de Saint-Étienne, (France).

38. **A.Şişman**, Z.F.Öztürk and C.Fırat, *"Quantum surface tension in ideal gases"*, World Year of Physics 2005-Turkish Physical Society 23rd. International Physics Congress, 13–16 September 2005, Muğla (Turkey).

39. **A. Şişman**, H. Saygın and A. Öztürk, "*Availability Analysis Of The Ericsson Refrigeration Cycles Working With Quantum Ideal Gases*", Proceedings of ECOS2001, pp:115-121, 4-6 July, 2001, Istanbul (Turkey).

40. **A. Şişman** and H. Saygın, "*Thermodynamic Analyses Of Heat Engines Based On The Casimir Effect at Finite Temperature"*, 2nd International Heat Powered Cycles Conference, pp:147-152, 5-7 September, 2001, Paris (France).

41. H. Saygın and **A. Şişman**, "*An Overview Of Thermodynamic Gas Cycles Working At Quantum Degeneracy Conditions*", 2nd International Heat Powered Cycles Conference, pp:139-146 5-7 September, 2001, Paris (France).

42. H. Saygın, T. Büke, **A. Şişman**, "*Reactivity Calculations for the Fuel Elements of ITU TRIGA Mark-II Reactor by Means of One-Group Perturbation Theory*", 14th European TRIGA Conference, Sep. 22-25, 1996, Mainz (Germany).

43. A. Durmayaz, **A. Şişman**, F. Çetin, H. Yavuz, "*Determination of the Effect of Xenon-135 Poisoning on Reactivity for the ITU TRIGA Mark-II Reactor*", 14th European TRIGA Conference, Sep. 22-25, 1996, Mainz (Germany).

44. T. Büke, **A. Şişman**, A. Durmayaz, H. Yavuz, "*An Experience on The Purification of Bacterially Infested ITU TRIGA Mark-II Reactor Water*", 14th European TRIGA Conference, Sep. 22-25, 1996, Mainz (Germany).

45. B. Erbay, **A. Şişman**, H. Yavuz, "*Analysis of Ericsson Cycle at Maximum Power Density Conditions*", ECOS-96, June 25-27, 1996, Stockholm, Sweden.

46. H. Yavuz, A. Bayülken, B. Can, N. Kurul, C. Baytaş, T. Büke, M. Aydın, **A. Şişman**, "*Computerization of ITU TRIGA Mark-II Console*", 12th European TRIGA Users Conference, Bükreş, ROMANYA, 28 September-1 October 1992.

Papers Published in International Conference Abstract Books (#18)

1. **A. Sisman**, A. Aydin and J. Fransson, "*Thermoshape potential",* 15th Joint European Thermodynamics Conference, 20-24 May 2019, Barcelona, Spain.

2. A. Aydin, J. Fransson and **A. Sisman**, "*Quantum shape effects on thermodynamics of electrons"*, 15th Joint European Thermodynamics Conference, 20-24 May 2019, Barcelona, Spain.

3. A. Aydin and **A. Sisman**, "*Macroscopic quantum shape effects on thermodynamic potentials"*, 14th Joint European Thermodynamics Conference, 21-25 May 2017, Budapest, Hungary.

4. S. Karabetoglu and **A. Sisman**, "*Thermosize effects in semiconductors*", 14th Joint European Thermodynamics Conference, 21-25 May 2017, Budapest, Hungary.

5. A. Aydin and **A. Sisman**, "*A Torque induced by matter waves as a new macroscopic quantum phenomenon"*, Fifth Quantum Thermodynamics Conference, 13-17 March 2017, Oxford, (UK)

6. A. Aydin and **A. Sisman**, "*Phase transition of quantum oscillations in 1D Fermi gas*", 25th SITGES Conference on Statistical Mechanics: Nonequilibrium phenomena in confined systems, 6-10 June 2016, Barcelona, (Spain)

7. S. Karabetoglu and **A. Sisman**, "*Modification of Knudsen law due to quantum size effects*", 25th SITGES Conference on Statistical Mechanics: Nonequilibrium phenomena in confined systems, 6-10 June 2016, Barcelona, (Spain)

8. S. Karabetoglu and **A. Sisman**, "*Thermosize potential in non-degenerate semiconductors"* 34th Annual International Conference on Thermoelectrics & 13th European Conference on Thermoelectrics, June 28- July 2, 2015, Dresden, (Germany).

9. A. Aydin, **A. Sisman** and Z. F. Ozturk, "*Thermal conductivity oscillations in 2DEG*" 13. Joint European Thermodynamics Conference, 20-22 May, 2015, Nancy, (France).

10. G. Babac and **A. Sisman**, "*Thermosize potential in semiconductors*" 13. Joint European Thermodynamics Conference, 20-22 May, 2015, Nancy, (France).

11. A. Aydin and **A. Sisman,** "*Dimensional Transition Point in Thermodynamic Properties of Maxwell-Boltzmann Gases*" 4th International Conference on Statistical Physics, 7-11 July 2014, Rhodes, (Greece)

12. C. Aksakal, **A. Şişman**, B. Barutçu and S. Yılmaz "*The repeatability investigation of impedance spectrum for SLI Lead Acid Batteries*" 9th International Electrochemistry Meeting in Turkey, 25-29 September 2011, İzmir, (Turkey).

13. G.Babac and **A. Sisman**, "A novel nano scale power cycle based on classical thermosize effects", The fifth international Ege Energy Symposium and Exhibition (IEESE-5), June 27-30, 2010, Denizli, (Turkey).

14. **A.Şişman** and H. Özgün, "Thermoelectric generators and their applications for energy from space", Program and Abstracts of International Workshop on Energy From Space for a Sustainable Environment, pp:31, 6-7 November 2008, Istanbul, (Turkey)

15. Z.F.Öztürk and **A.Şişman,** "*Quantum size effects on transport properties of noble gases*", Programme and Abstracts of the XXIII IUPAP International Conference on Statistical Physics, pp:197, 9-13 July 2007, Genova (Italy).

16. B.Barutçu and **A.Şişman**, "*Quantum size effects on the metric properties of thermodynamic state space*", Thermodynamics 2007, 26-28 September 2007, Rueil-Malmaison (France).

17. **A. Şişman** and I. Muller, *"Casimir-like size effects in ideal gases"*, Workshop on Discrete Atomistic Models and Their Continuum Limits, 4-6 December 2003, WIAS, Berlin (Germany).

18. **A. Şişman (**Invited Speaker**)**, "*Quantum Degeneracy, Classical and Finite-Time Thermodynamics: II. Some Applications on Work Analyses and Optimizations*", Advances in Finite-Time Thermodynamics Conference", 12-14 November, 2000, Jerusalem (Israil).

14. National Conference Papers (#4)

Papers Published in National Conference Proceedings

1. M. Aydin, M. Onur and **A. Sisman**, "A new application methodology for constant temperature thermal response tests", 13. National HVAC & Sanitary Congress and Exhibition, TESKON2013, Izmir, 19-22 April 2017, Turkey.

2. M. Aydin, **A. Sisman**, S. Dincer, C. Erdogan and A. Gultekin, "Thermal response test and analytical prediction of borehole performance for ground source heat pumps", 11. National HVAC & Sanitary Congress and Exhibition, TESKON2013, Izmir, 17-20 April 2013, Turkey.

3. **A. Şişman**, H. Yavuz, "*High Temperature Corrections for the Expressions of Radiative losses from a black-body*", 11. National Heat Science and Technology Conference, Edirne, 17-19 September 1997, Turkey.

4. **A. Şişman**, H. Yavuz, "*Utilization of Magnetohydrodynamic Generators in Thermal Power Plants and Development of A Pre-Design Method*", 8. National Heat Science and Technology Conference, Eskişehir, 10-12 September 1991, Turkey.

15. Published Technical Reports

1. *General evaluation of nuclear power plants for Turkey in terms of technological, economical, industrial, social and environmental impacts*, April 2018, ITU-Vision for Ministry of Energy and Natural Resources of Turkish Republic. (Project leader)
2. *Energy and its future in Turkey-ITU Vision*, December 2006, (the section for hydrogen energy was written together with Prof. Dr. Figen Kadırgan),

16. Talks and Media Interviews

1. A. Sisman, "*Ground Source Heat Pump Studies in ITU Energy Institute*", Panel on Heat Pumps and Their Applications, Istanbul Technical University-North Cyprus, Continuing Education Center, 16 February 2018, Lefkosa, North-Cyprus.
2. Many interviews (#38) on sector journals, television channels, newspapers.