

# CURRICULUM VITAE

Hüseyin Sami Sözüer

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## Personal

Date of Birth: June 1, 1958  
Place of Birth: Salihli, Turkey  
Address: Department of Physics  
Izmir Institute of Technology  
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## Education

1983 B.Sc. in Physics, Bosphorus University  
1992 Ph.D. in Physics, University of Wyoming  
Thesis Title: "Photon bands"

## Employment

1983-1992 Graduate Assistant  
[Department of Physics and Astronomy, University of Wyoming](#)  
1984-1985 Research Assistant  
[Department of Physics, Tandem Laboratory, University of Pennsylvania](#)  
1992-1994 Postdoctoral Research Associate  
[Department of Physics, Rensselaer Polytechnic Institute](#)  
1994-1995 Lecturer and Postdoctoral Research Associate  
[Department of Physics, Mississippi State University](#)  
1995-1997 Research and Development Chief  
[Hesfibel Fiber-Optic Inc., Kayseri](#)  
1997-1999 Assistant Professor  
[Department of Physics, Dokuz Eylul University](#)  
1999-present Assistant Professor  
[Department of Physics, Izmir Institute of Technology](#)

## **Research Areas**

- Optics
- Photonic crystals
- Theoretical condensed matter physics
- Computational physics
- Parallel computing

## **Research Projects (as Principal Investigator)**

- *Photonic Crystals for Optoelectronics*,  
Co-Principal Investigator (with J.W. Haus),  
Jointly funded by the National Science Foundation and the Army Research Office, 1993.
- *Stable photonic-crystal based optical fiber and the design of one-dimensional waveguides with random defects*,  
Principal Investigator,  
TUBITAK Project 107T569, 2007.
- BAP Project I
- BAP Project II

## **Research Visits**

- University of St. Andrews,  
Sponsored by the High-Performance Computing (HPC) Europa Program,  
September-December 2005.
- Technical University of Kaiserslautern,  
Sponsored by the research group of Prof. Dr. E. Oesterschulze,  
July-September 2007.

## **Administrative Duties**

- Vice Chairperson, Center for Computational Research and Applications,  
Izmir Institute of Technology, 2000-2002
- Vice Dean, School of Graduate Studies,  
Izmir Institute of Technology, 2002-2006
- Vice Chairperson, Physics Department,  
Izmir Institute of Technology, 2008-present
- Member of the Executive Board, Center for Continuing Education,  
Izmir Institute of Technology, 2008-2009

## Other Professional Activities

- Elected Trainer of the TUBITAK Team for the Physics Olympiads.

## Graduate Students Supervised

- Koray Sevim, M.Sc. student, graduated in 2004,  
M.Sc. Thesis Title: “One-dimensional photonic crystal waveguide”.
- Duygu Şengün, M.Sc. student, graduated in 2009.  
M.Sc. Thesis Title: “[Photonic Crystal Assisted L-shaped Waveguide Bend](#)”
- Adem Enes, M.Sc. student, graduated in 2009.  
M.Sc. Thesis Title: “[Frequency Splitting with Two-Dimensional Triangular Photonic Crystal](#)”
- Zebih Çetin, M.Sc. student, in progress.
- Neslihan Eti, Ph.D. student in the Department of Mathematics, in progress.

## Journal Refereeing

- Journal of Lightwave Technology
- Journal of the Optical Society of America B
- Modern Physics Letters
- International Journal of Modern Physics B

## Conferences

- [Performance of a  \$4\pi\$  Multi-Segment Charged Particle Detector](#),  
T. Chapuran, D.P. Balamuth, H.S. Sozuer, J. Gorres, and J. Arrison,  
Annual Meeting of the American Physical Society, Baltimore, 1985.
- *Convergence Problems in Photonic Band Calculations*,  
H.S. Sözüer, R. Inguva, and J.W. Haus,  
Annual Meeting of the Optical Society of America, San Jose, 1991.
- [Bilgisayar laboratuvarında ince istemci mimarisi ile paralel küme oluşturulması](#),  
Conference on Academic Information Technology, Dumlupınar University, Kütahya,  
2007.
- *Bir boyutlu fotonik kristal dalga kılavuzu*,  
Koray Sevim, H. Sami Sözüer,  
Türk Fizik Derneği 22. Fizik Kongresi, Bodrum, 2004
- *Bir boyutlu fotonik kristallerin bant yapısında rastgele hataların etkileri*,  
Koray Sevim, H. Sami Sözüer,  
Türk Fizik Derneği 22. Fizik Kongresi, Bodrum, 2004
- *A Second Look at Disorder in 2D Photonic Crystals*,  
H. Sami Sözüer,  
Translational Access Meeting (TAM), Barcelona, 2006.

- *Photonic Crystal Assisted 90<sup>0</sup> Waveguide Bend*,  
H. Duygu Şengün and H. Sami Sözüer,  
5th National Nano-science and Nano-technology Conference,  
Eskişehir Anadolu University, 2009.
- *Photonic Crystal Assisted 90<sup>0</sup> Waveguide Bend*,  
H. Duygu Şengün and H. Sami Sözüer,  
International Conference on Nanomaterials and Nanosystems,  
Istanbul Technical University, 2009.

## Membership

Optical Society of America

## Courses Taught

|                           |                      |
|---------------------------|----------------------|
| Introductory physics I    | Freshman level, 2009 |
| Introductory physics II   | Freshman level, 2010 |
| Optics                    | Sophomore level,     |
| Classical mechanics       | sophomore level,     |
| Quantum mechanics         | Junior level,        |
| Computational physics     | Junior level,        |
| Electricity and magnetism | Junior level,        |
| Statistical physics       | Junior level,        |
| Solid state physics       | Senior level,        |
| Photonic Structures,      | Undergraduate level, |
| C Programming             | Undergraduate level, |
| Electricity and magnetism | Graduate level,      |

## Citations received in the Science Citation Index: 588

Title: [Robustness of one-dimensional photonic band gaps under random variations of geometrical parameters](#)

Author(s): Sozuer HS, Sevim K

Source: **PHYSICAL REVIEW B** Volume: 72 Issue: 19 Article Number: 195101 Published: NOV 2005

Times Cited: [3](#)

Title: [PHOTONIC BAND CALCULATIONS FOR WOODPILE STRUCTURES](#)

Author(s): SOZUER HS, DOWLING JP

Source: **JOURNAL OF MODERN OPTICS** Volume: 41 Issue: 2 Pages: 231-239 Published: FEB 1994

Times Cited: [131](#)

Title: [PHOTONIC BANDS - SIMPLE-CUBIC LATTICE](#)

Author(s): SOZUER HS, HAUS JW

Source: **JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS** Volume: 10 Issue: 2 Pages: 296-302

Published: FEB 1993

Times Cited: [120](#)

Title: [PHOTONIC BANDS - ELLIPSOIDAL DIELECTRIC ATOMS IN AN FCC LATTICE](#)

Author(s): HAUS JW, SOZUER HS, INGUVA R

Source: **JOURNAL OF MODERN OPTICS** Volume: 39 Issue: 10 Pages: 1991-2005 Published: OCT 1992

Times Cited: [28](#)

Title: [PHOTONIC BANDS - CONVERGENCE PROBLEMS WITH THE PLANE-WAVE METHOD](#)  
Author(s): SOZUER HS, HAUS JW, INGUVA R  
Source: **PHYSICAL REVIEW B** Volume: 45 Issue: 24 Pages: 13962-13972 Published: JUN 15 1992  
Times Cited: [305](#)

Title: [ELECTRON PHOTON ANALOGY ANALYZED](#)  
Author(s): SOZUER HS, INGUVA R, HAUS JW  
Source: **PHYSICS TODAY** Volume: 45 Issue: 4 Pages: 121-122 Published: APR 1992  
Times Cited: [1](#)

### **Citations received in US patents:** 19

- 1 [7,820,365](#) [Method to fabricate a tilted logpile photonic crystal](#)
- 2 [7,709,095](#) [Infra-red reflecting layered structure](#)
- 3 [6,813,064](#) [Electro-actively tunable photonic bandgap materials](#)
- 4 [6,812,482](#) [Method to fabricate layered material compositions](#)
- 5 [6,744,552](#) [Photonic signal frequency up and down-conversion using a photonic band gap structure](#)
- 6 [6,660,551](#) [Semiconductor process](#)
- 7 [6,597,851](#) [Periodic dielectric structure having a complete three-dimensional photonic band gap](#)
- 8 [6,589,334](#) [Photonic band gap materials based on spiral posts in a lattice](#)
- 9 [6,538,794](#) [Efficient non-linear phase shifting using a photonic band gap structure](#)
- 10 [6,414,780](#) [Photonic signal reflectivity and transmissivity control using a photonic band gap structure](#)
- 11 [6,396,617](#) [Photonic band gap device and method using a periodicity defect region doped with a gain medium to increase photonic signal delay](#)
- 12 [6,339,493](#) [Apparatus and method for controlling optics propagation based on a transparent metal stack](#)
- 13 [6,304,366](#) [Photonic signal frequency conversion using a photonic band gap structure](#)
- 14 [6,262,830](#) [Transparent metallo-dielectric photonic band gap structure](#)
- 15 [6,002,522](#) [Optical functional element comprising photonic crystal](#)
- 16 [5,784,400](#) [Resonant cavities employing two dimensionally periodic dielectric materials](#)
- 17 [5,682,401](#) [Resonant microcavities employing one-dimensionally periodic dielectric waveguides](#)
- 18 [5,600,483](#) [Three-dimensional periodic dielectric structures having photonic bandgaps](#)
- 19 [5,440,421](#) [Three-dimensional periodic dielectric structures having photonic bandgaps](#)

### **Citations received in published books:** 24

#### **Progress in Optics, Volume 49**

by Emil Wolf  
Elsevier Science; 1 edition (October 17, 2006) ISBN-10: 044452732X

#### **Photonic Crystals: Molding the Flow of Light (Second Edition)**

by John D. Joannopoulos, Steven G. Johnson, Joshua N. Winn, and Robert D. Meade  
Princeton University Press; 2 edition (February 11, 2008) ISBN-10: 0691124566

#### **Photonic Crystals: Physics, Fabrication and Applications (Springer Series in Optical Sciences)**

by K. Inoue and K. Ohtaka  
Springer; 1 edition (August 26, 2004) ISBN-10: 3540205594

**Quantum Optics of Confined Systems (NATO Science Series E: (closed))**

by M. Ducloy and Daniel Bloch  
Springer; 1 edition (March 31, 1996) ISBN-10: 0792339746

**Photonic Band Gap Materials (NATO Science Series E: (closed))**

by C.M. Soukoulis  
Springer; 1 edition (March 31, 1996) ISBN-10: 0792339916

**Photonic Crystals: Advances in Design, Fabrication, and Characterization**

by Kurt Busch, Stefan Lölkes, Ralf B. Wehrspohn, and Helmut Föll  
Wiley-VCH (April 12, 2004) ISBN-10: 3527404325

**Photonic Crystals: Physics and Practical Modeling (Springer Series in Optical Sciences)**

by [Igor A. Sukhoivanov](#) and Igor V. Guryev  
Springer; 1 edition (October 29, 2009) ISBN-10: 3642026451

**Electromagnetic Metamaterials: Physics and Engineering Explorations**

by Nader Engheta and Richard W Ziolkowski  
Wiley-IEEE Press (July 11, 2006) ISBN-10: 0471761028

**Colloids and Colloid Assemblies: Synthesis, Modification, Organization and Utilization of Colloid Particles**

by [Professor Frank Caruso](#)  
Wiley-VCH (March 22, 2004) ISBN-10: 3527306609

**"The Handbook of Nanotechnology. Nanometer Structures: Theory, Modeling, and Simulation (SPIE Press Monograph Vol. PM129)"**

by Akhlesh Lakhtakia (Editor)  
SPIE Publications (July 2, 2004) ISBN-10: 081945186X

**The Supramolecular Chemistry of Organic-Inorganic Hybrid Materials**

by Knut Rurack and Ramon Martinez-Manez  
Wiley (March 22, 2010) ISBN-10: 047037621X

**Periodic Materials and Interference Lithography for Photonics, Phononics and Mechanics**

by [Martin Maldovan](#) and Edwin L. Thomas  
Wiley-VCH (December 16, 2008) ISBN-10: 3527319999

**Photonic Crystals and Light Localization in the 21st Century (NATO Science Series C: (closed))**

by C.M. Soukoulis  
Springer; 1 edition (May 31, 2001) ISBN-10: 0792369483

**Photonic Crystals: The Road from Theory to Practice**

by [Steven G. Johnson](#) and John D. Joannopoulos  
Springer; 1st edition (January 15, 2002) ISBN-10: 0792376099

**Advanced Millimeter-wave Technologies: Antennas, Packaging and Circuits**

by Duixian Liu, Ulrich Pfeiffer, Janusz Grzyb, and Brian Gaucher  
Wiley (April 27, 2009) ISBN-10: 047099617X

**Nanoscale Materials**

by Luis M. Liz-Marzan and Prashant V. Kamat  
Springer; 1 edition (January 31, 2003) ISBN-10: 1402073666

**Photonic Crystal Fibres**

by [Anders Bjarklev](#), Jes Broeng, and Araceli Sanchez Bjarklev  
Springer; 1 edition (September 30, 2003) ISBN-10: 140207610X

**Topics in Computational Materials Science**

by C. Y. Fong  
World Scientific Publishing Company (June 1998) ISBN-10: 9810231490

**Confined Electrons and Photons: New Physics and Applications (NATO Science Series B: Physics)**

by Elias Burstein and Claude Weisbuch

Springer; 1 edition (May 31, 1995) ISBN-10: 0306449900

**Nonlinear Phenomena Research Perspectives**

by Yami Zarmi, V. P. Sakhnenko, Sabri Arik, and Sibel Senan

Nova Science Publishers, Inc. (July 23, 2007) ISBN-10: 1600215203

**Nanoscale linear and nonlinear optics:**

International School on Quantum Electronics, Erice, Sicily, 2-14 July 2000

by [Mario Bertolotti](#), [Charles M. Bowden](#), [Concita Sibilìa](#)

American Institute of Physics, 2001

**Leading edge polymer research**

by Robert K. Bregg

Nova Science Publishers, (2006) ISBN 9791594544353

**Materials Science of Thin Films, Second Edition**

by [Milton Ohring](#)

Academic Press; 2 edition (October 29, 2001) ISBN-10: 0125249756

**Optical Response of Nanostructures: Microscopic Nonlocal Theory (Springer Series in Solid-State Sciences)**

by [Kikuo Cho](#)

Springer; 1 edition (June 4, 2003) ISBN-10: 3540003991