

Curriculum Vitae

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Contact Information

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EDUCATION

2008 - 2010 MSc. Bilkent University - Department of Electrical and Electronics Engineering
Area: Nanotechnology; Solar cells
Advisor: Hilmi Volkan Demir & Co-advisor: Ali Kemal Okyay

2005 - 2008 BSc. Bilkent University - Department of Electrical and Electronics Engineering

2003 - 2005 Bilkent University - Department of Computer Technology & Information Systems (*Department change after 3 semesters*)

1999 - 2003 Gazi Anadolu Lisesi - Ankara

HONORS & AWARDS

2008-2011: Merited full scholarship for MSc. and PhD. studies by Bilkent University

2008: Listed in dean's honor list at graduation

2005-2006: Merited high success scholarship by Bilkent University

2004-2005: Merited high success scholarship by Bilkent University

2003-2008: Bilkent University High Honor (6 semesters) and Honor Certificates (3 Semesters)

PATENT

1. " $TiO_2 - ZnO$ nanocomposite film", H.V. Demir, G Çeliker, D. Yücel, S. Tek, E. Mutlugün, M. A. Sefünç, Bilkent University – DYO joint European patent pending, patent no: EP09163189

DISSERTATION

1. "Novel volumetric plasmonic resonator architectures for enhanced absorption in thin-film organic solar cells", August 2010, MSc. Thesis, Bilkent University

PUBLICATIONS

Journal Papers

1. "Anisotropic emission from multilayered plasmon resonator nanocomposites of isotropic semiconductor quantum dots", T. Ozel, S. Nizamoglu, M.A. Sefunc, O. Samarskaya, I. O. Ozel, E. Mutlugun, S. V. Gaponenko, N. Gaponik, S. G. Hickey, A. Eychmuller, and H. V. Demir, ACS Nano, 5 (2), pp 1328–1334, 2011.
2. "Volumetric plasmonic resonators for increased absorption in thin-film organic solar cells", M.A. Sefunc, A. K. Okyay and H. V. Demir, Applied Physics Letters, 98 (9), 2011.
3. "Photocatalytic hybrid nanocomposites of metal oxide nanoparticles enhanced towards the visible spectral range", N. K. Perkgoz, E. Unal, M. A. Sefunc, R. S. Toru, S. Tek, E. Mutlugun, I. M. Soganci, H. Celiker, G. Celiker and H. V. Demir, Applied Catalysis B: Environmental 105 (1-2), 2011.
4. "Omni-polarized increased absorption in P3HT:PCBM based organic solar cells via excitation of plasmonic modes in periodic metallic back contact", M. A. Sefunc, A. K. Okyay and H. V. Demir, Optics Express, 19 (15), 14200-14209, 2011.

Conference Papers

Refereed International Conferences

5. "Photocatalytic cleaning and nanotechnology", G. Celiker, H. V. Demir, D. Yucel, M. A. Sefunc, E. Mutlugun, Advances in Coatings Technology (ACT'08) Conference, Warsaw, Poland (25-27 November 2008). Paper 34. *Invited Paper*.
6. "Volumetric plasmonic resonators for very thin organic solar cells", M. A. Sefunc, A. K. Okyay and H. V. Demir, 2010 IEEE Photonics Society Annual Meeting, Denver, USA.
7. "Observation of anisotropic emission from semiconductor quantum dots in nanocomposites of metal nanoparticles", T. Ozel, S. Nizamoglu, M. A. Sefunç, O. Samarskaya, I. O. Ozel, E. Mutlugun, V. Lesnyak, N. Gaponik, A. Eychmüller, S. V. Gaponenko and H. V. Demir, 2010 IEEE Photonics Society Annual Meeting, Denver, USA.
8. "Volumetric plasmonic resonator architectures for thin-film solar cells" M. A. Sefunc, A. K. Okyay, and H. V. Demir. 2011 N4E-Enhancing Energy Efficiency through Nanophotonics, Plenary meeting (1-2 June), Stockholm, Sweden.

Refereed National Conferences (Turkey)

9. "Photocatalytic Nanocomposites for Increased Optical Activity in the near UV and Visible", M. A. Sefunç, E. Mutlugün, N. Kosku Perkgöz, D. Yücel, G. Çeliker, and H. V. Demir, Nanoscience and Nanotechnology Conference (NANOTR IV), Istanbul Technical University, Istanbul (9-13 June 2008).
10. "Nanocrystal hybridization of Si devices for significant enhancement in UV operation", E. Mutlugün, M. A. Sefunç, I. M. Soganci, and H. V. Demir, Nanoscience and Nanotechnology Conference (NANOTR IV), Istanbul Technical University, Istanbul (9-13 June 2008).
11. "Plasmonically Enhanced Extraordinary Absorption in Light Trapping Silicon Photonic Devices for Photodetection and Photovoltaics", M. A. Sefunç, A. K. Okyay, H. V. Demir, Graduate Research Conference (GRC 2010), Bilkent University, Ankara (March 2010).
12. "Volumetric plasmonic resonators for thin-film photovoltaics", M. A. Sefunç, A. K. Okyay, H. V. Demir, Graduate Research Conference (GRC 2011), Bilkent University (March), Ankara.

TALKS GIVEN

1. "Plasmonically Enhanced Extraordinary Absorption in Light Trapping Silicon Photonic Devices for Photodetection and Photovoltaics", (2010) Graduate Research Conference, Bilkent University, Ankara, Turkey.
2. "FDTD Solver Training (Lumerical)", (2010) Department of Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey.
3. "Volumetric plasmonic resonators for very thin organic solar cells", (2010) IEEE Photonics Society Annual Meeting, Denver, USA.
4. "Volumetric plasmonic resonator architectures for thin-film solar cells", (2011) N4E-Enhancing Energy Efficiency through Nanophotonics, Plenary meeting, Stockholm, Sweden.
5. "Plasmonics for improved organic photovoltaic devices", (2011) University of Twente, Enschede, The Netherlands.
6. "Plasmonics for improved photovoltaic devices", (2011) FOM-AMOLF/Philips Research Laboratories @ High-Tech Campus, Eindhoven, The Netherlands.

WORKSHOP & CONFERENCE ATTENDANCE

1. 7. National Optical, Electro-Optics and Photonic Workshop (FOTONİK 2005), Bilkent University, Ankara, Turkey, (12 December 2005).
2. Nanoscience and Nanotechnology Conference (NANOTR IV), Istanbul Technical University, Istanbul, Turkey (9-13 June 2008).
3. A Future in Light, Supélec Metz Campus, Metz, France (25-27 March 2009).
4. COST MP0702 Training School on Nonlinear Nanophotonics, Supélec Metz Campus, Metz, France (23-25 March 2009).
5. Finite-difference time-domain solver (FDTD software package) training, Lumerical Inc., March 2010, Würzburg, Germany.
6. Dual Beam Workshop UNAM-FEI Company, Bilkent University, April 2010, Ankara, Turkey.
7. 2010 IEEE Photonics Society Annual Meeting, November 2010, Denver, USA.
8. N4E-Enhancing Energy Efficiency through Nanophotonics, Plenary meeting (1-2 June 2011), Stockholm, Sweden.

MEMBERSHIP

2005: Bilkent University Nanotechnology Club
2005: Bilkent University Engineering Society
2005-2006: Vice chair and founding member of Bilkent University Nanotechnology Club
2010-2011: IEEE and IEEE Photonics Society student membership

TEACHING EXPERIENCE

1. Teaching Assistant & Coordinator Fall 2008/2009/2010 – EEE 411 / 511 Telecommunication Electronics

2. Teaching Assistant Spring 2009 – EEE 211 Microprocessors
3. Teaching Assistant & Coordinator Spring 2010/2011 – EEE 560 Nanoengineering and Nanodevices

WORK EXPERIENCE

- 2011 –** Peer review (on the topic of plasmonics and solar cell)
 “Recent Patents on Materials Science” - Bentham Science Publishers Ltd.
- 2008(September) – 2011(June)** Research Assistant & Teaching Assistant
 Bilkent University @ Department of Electrical and Electronics Engineering & @ Institute of Materials Science and Nanotechnology – National Nanotechnology Research Center Project (UNAM), Devices and Sensors Group (PI: Hilmi Volkan Demir)
- 2007(August)** Intern
 Mert Energy @ Information Technology Department
 - writing a check-shot software
- 2006(July)** Intern
 T.P.A.O @ Information Technology Department
 - writing a coordinate converter program by using different projections and spheroid algorithms
 - designing temperature control system circuit by PIC

TECHNICAL ABILITIES

Class 100 and Class 10000 Cleanroom Fabrication facilities: Mask Aligner, Box Coater, Surface Profiler (DEKTAK), Probe Station, Monochrometer, FIB (FEI Nova 600i Nanolab)

Programming Languages: C, C++, Java, Assembly Language for Intel 8086, 8088 and Motorola 68000, VHDL (Very High Speed IC Hardware Design Language), Visual Basic, PicBasic Pro, SQL

Package Softwares: All versions of Windows, Mac OS, Linux, All versions of Microsoft Office, Matlab, AutoCAD, Xilinx, PSpice, OrCAD, Proteus Pro, Minimos Microelectronic device simulator, LabView, Lumerical FDTD

Languages: Turkish (Native), Advance English, Basic German

REFERENCES

Prof. Hayrettin Köymen (Former Dept. Chair)

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 Communications & Spectrum Management Research Center (ISYAM)
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