

## CV - SUMMARY

**Published journals (selected):** Nature, Nature Materials (4), Scientific Reports (4), Nano Letters (2), ACS Nano (1), Advanced Materials (3), Advanced Functional Materials (1), Physical Review Letters, Chemical Communications (2), Analytical Chemistry (3), Applied Physics Letters (10), Physical Review (8)

**Number of articles:** 85 (WoS)  
**Citations:** 2885 (WoS), 4363 (Scholar)  
**H-index:** 27 (WoS), 34 (Scholar)  
**Patents:** 3 (USA), licenced; 2 (Turkey)

**Awards:** OSA New Focus Student Award, Young Scientists Award of Turkish Academy of Sciences, The Turkish Scientific and Technical Research Council Award

**Grants:** ERC Starting Grant (2 Million USD, 1<sup>st</sup> in Turkey), 11 Tubitak and Industry Grants (18 Million USD), ERC PoC (1<sup>st</sup> in Bilkent)

**Teaching:** Student evaluation score: average 4.4/5.0 (35 courses)

**Supervision:** 23 MS thesis (18 completed), 10 PhD thesis (7 completed)

**Talks:** 98 (35 invited)

**Significant scientific contributions:** A new fabrication scheme in nanotechnology, multimaterial in-fiber devices, smart surfaces and sensors, metamaterials, a new propagation mechanism for light,

**Contributions to Society:** Establishing of first National Nanotechnology Research Center of Turkey (27 M USD) and Materials Science and Nanotechnology Graduate Programs (currently ~110 students)

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## BIOGRAPHY



PROFESSOR MEHMET BAYINDIR

Dr. Bayindir received his Ph.D. degree in physics from Bilkent University, Ankara, Turkey in 2002. During his Ph.D. thesis work, Dr. Bayindir concentrated on the physics and applications of photonic band gap materials. His pioneering work on coupled-cavity structures in photonic crystals has drawn a considerable amount of interest in recent years.

As a post-doctoral researcher and later research scientist, at the Research Laboratory for Electronics / MIT, Dr. Bayindir developed a new fabrication technique for making multimaterial, active in-fiber devices from metal, insulator and semiconducting parts for the first time. This breakthrough earned critical acclaim and recognition, resulting in 5 publications in Nature, Nature Materials, and Advanced Materials, and 3 issued directly related patents.

After returning to his home country, he undertook (together with Prof. Salim Çıracı) the establishing of UNAM-National Nanotechnology Research Center, and he served as the director of UNAM between 2013 and 2015. With close to 400 researchers, UNAM became one the top reserach center in the region. They also started graduate programs in Institute of Materials Science and Nanotechnology that have attracted more than 110 graduate students.

Until July 2016, he was heading Bayindir Research Group at UNAM. The group was working on optical fibers, functional nanostructured surfaces, nano-scale photonics, fiber-based devices. In 2011, Bayindir group demonstrated a novel integrated fiber device with binary logic readout where photonic bandgap fibers are used for chemical sensing by infrared absorption spectroscopy. More recently, the group proposed and demonstrated a new nanofabrication scheme which allows mass-production of indefinitely-long nanostructures. This new technique was published in Nature Materials and selected as the cover of July 2011 issue.

He is the author of 83 citation-index journal articles, and more than 40 refereed conference papers. He also holds 3 issued US and 2 Turkish patents. He serves as a reviewer for several scientific journals including Nature Materials, Nature Communications, Advanced Materials, Small, and Physical Review Letters. Until now 24 students completed their MS or PhD thesis with Prof. Bayindir, some of them were accepted to the top schools, including MIT and Max Planck, in the world.

Dr. Bayindir won the young scientist prize of the Turkish Scientific and Technical Research Council (TUBITAK) in 2006 and The Young Scientists Award of Turkish Academy of Sciences (TUBA) in 2007. He was the winner of the Optical Society of America's 2001 New Focus Award and 2005 MIT best poster award. In 2012, Professor Bayindir, has been awarded prestigious European Research Council ERC Consolidator Grant (first grant awarded from ERC in Turkey). Very recently, Dr. Bayindir has been awarded an ERC Proof of Concept grant to support commercialisation of piezo nanosystems developed in ERC-funded research for smart skin, cardiac sensors, and energy harvesting applications.

## CURRICULUM VITAE

Title, Name, Last Name: **Professor Mehmet BAYINDIR**

**1. PERSONAL DATA**

- Birth date and place: 1975, Ermenek, Konya / Turkey
- Address: Merkez Kampus Loj. 42/3, Bilkent, 06800 Ankara, Turkey
- E-mail: mb@4unano.com
- Webpage: <http://4unano.com>

**2. ACADEMIC DEGREES**

- Professor, Bilkent University 03/2014
- Associate Prof., Bilkent University 03/2012
- Assistant Prof., Bilkent University 02/2006
- Ph. D., Physics, Bilkent University 06/2002

**3. EMPLOYMENT HISTORY**

- 03/14-09/16: Professor, Bilkent University, Department of Physics
- 01/08-09/16: PI, UNAM-National Nanotechnology Research Center, Bilkent University
- 02/13-12/15: Director, Institute of Materials Science and Nanotechnology, Bilkent University
- 02/13-12/15: Director, UNAM-National Nanotechnology Research Center, Bilkent University
- 02/13-12/15: Director, Graduate Programs in Materials Science and Nanotechnology, Bilkent University
- 01/08-02/13: Deputy Director, Institute of Materials Science and Nanotechnology, Bilkent University
- 01/08-02/13: Deputy Director, UNAM-National Nanotechnology Research Center, Bilkent University
- 01/08-02/13: Deputy Director, Graduate Programs in Materials Science and Nanotechnology, Bilkent University
- 03/12-03/14: Associate Professor, Bilkent University, Department of Physics
- 02/06-03/12: Assistant Professor, Bilkent University, Department of Physics
- 05/05-02/06: Research Scientist, Massachusetts Institute of Technology, Research Laboratory of Electronics
- 06/02-05/05: Postdoctoral Research Associate, Massachusetts Institute of Technology, Research Laboratory of Electronics

**4. PROFESSIONAL AWARDS**

- European Research Council-ERC Proof of Concept Grant Award 2016
- European Research Council-ERC Starting Grant Award 2012
- The Young Scientists Award of Turkish Academy of Sciences (TUBA) 2007
- The Turkish Scientific and Technical Research Council (TUBITAK) Award 2006
- MIT Best Poster Award 2005
- Optical Society of America (OSA) New Focus Student Award 2001

**5. HONORS, SCHOLARLY AND PROFESSIONAL DUTIES AND ACHIEVEMENTS**

- Refereeing for journals including *Nature Materials*, *Nature Communications*, *Advanced Materials*, *Advanced Functional Materials*, *Physical Review Letters*, *Applied Physics Letters*, *Optics Letters*, *Physical Review B*, *Physical Review A*, *Physical Review E*, *Optics Express*, *Journal of Applied Physics*, *IEEE Journal of Quantum Electronics*, *Photonic Technology Letters*, *Optics Communications*, *ACS Applied Materials and Interfaces*, *Langmuir*, *Small*, *Nanoscale*, *ACS Inorganic Chemistry*, *Journal of Colloid and Interface Science*, *Polymer Chemistry*, *AIP Advances*, *Scientific Reports*  
2000-Present
- FP7 NMP delegate of Turkey: Nanotechnology, Materials Science and New Production  
2007-2008
- Member of Panel on the review of projects submitted to State Planning Organization of Turkey  
2008-Present
- Member of Panel on the review of projects submitted to The Turkish Scientific and Technical Research Council  
2006-Present

**6. MEMBERSHIP**

- American Physical Society (APS) 1995-Present
- Optical Society of America (OSA) 1998-Present
- Materials Research Society (MRS) 2002-Present
- American Chemical Society (ACS) 2012-Present

**7. INVITED LECTURES AND INVITED TALKS**

- *Piezoelectric Polymer Nanoribbons Produced by Iterative Size Reduction Technique for Electronic Skin, Artificial Hand and Electro Cardiac Devices*, 17 June 2016, NGPT Workshop, Rome, Italy.
- *Realization of a novel nanofabrication scheme: Producing kilometer-long nanostructures*, 17 June 2015, UNIDO Workshop, UNAM, Ankara.
- *Reinvention of fiber drawing in the age of nanotechnology: A new top-to bottom nanofabrication scheme*, 16 April 2015, ITU Nanotechnology Research Center, Istanbul.
- *Excellence in Science – ERC Enables Young Researchers*, ERC, TÜBİTAK, TÜBA, İstanbul, 29 August 2014.
- *ERC-Grantees Conference 2014, Frontiers in Chemistry – The Basis for Advanced Materials*, Berlin, Germany, 28 August 2014.
- *A new nanofabrication technique and its applications in photonics*, Photonics 2013, Aselsan, Ankara, 06 September 2013.
- *A novel nanofabrication technique by thermal size reduction*, Turkish Physical Society Annual Meeting, Istanbul, 2013.
- *A new top-to-bottom fabrication technique in nanotechnology: producing kilometer long insulating, piezoelectric, and semiconducting nanostructures*, KAUST, Ceddah, Saudi Arabia, 20 September 2013.
- *Nanotechnology: A key to sustainable development*, Tubitak Bilgem, Gebze, 29 January 2013.
- *A novel nanofabrication technique by thermal size reduction*, Tubitak MAM, Gebze, 13 September 2012.
- *Nanostructured sensors: Large-area nanowire circuitry and digital optoelectronic nose*, UNIDO Workshop, Ankara, 25 Jun-08 Jul 2012.
- *A New Top-To-Bottom Nanofabrication Technique*, Applications of Nanotechnology in Industry, Opportunity of Integration among IDB Member States, Egypt, 29–31 January 2012.
- *Nanotechnology for a Sustainable Development*, Applications of Nanotechnology in Industry, Opportunity of Integration among IDB Member States, Egypt, 29–31 January 2012.
- ( Keynote speaker ) *Nanotechnology: Engineering a better future*, 4th Wief-UITM Global Discourse On Nanotechnology, Kuala Lumpur, Malasia, October 14, 2011.
- *A new fabrication technique in nanotechnology*, Nanotechnology Informatics and New Economic Paradigms, Applied Econometrics Association, Ankara, October 2010
- *Nanotechnology revolution: Muslim world at a crossroad*, Al-Dhahran, Saudi Arabia, March 2010.
- *Nanotechnology: A new technology revolution*, Erzurum Ataturk University, Erzurum, June 2010.
- *Nanomaterials, nanofibers, nanodevices for sensing applications*, Ankara University, Ankara, April 2010.
- *Nanotechnology in the World and Turkey*, TOBB-ETU University, Ankara, October 2010.

- *Nanotechnology in defense*, ANSAF'10, Ankara, October 2010.
- *Nanomaterials, nanofibers, and nanodevices*, Fatih University, Istanbul, June 2010.
- *New trends in nanotechnology*, Turkish Physical Society, Bodrum, 2009.
- *Nanomaterials, nanofibers and nanodevices for sensing applications*, Istanbul Technical University, Istanbul, 2009
- *Investigation of nanophotonic structures*, National Spectroscopy Congress, Ankara, 2009.
- *Nanomaterials, nanofibers and nanodevices for sensing applications*, Koc University, Istanbul, 2009
- *Nanotechnology and photovoltaics*, Istanbul Chamber of Industry, Istanbul, 2008.
- *Nanotechnology*, Istanbul Chamber of Commerce, Istanbul, 2008.
- *Novel fibers and fiber-based devices*, Optics Summer School, Middle East Technical University, Ankara, 2008.
- *Nanophotonics*, Nanoscience and Nanotechnology Conference III, Ankara, 2007.
- *A new fabrication technique in nanotechnology*, Istanbul Technical University, Istanbul, 2007.
- *Nanotechnology tools for defense applications*, Nanoscience and Nanotechnology Conference III, Ankara, 2007.
- *A new fabrication technique: Kilometer-long nanostructures*, Nanoscience and Nanotechnology Conference II, Ankara, 2006.
- *Nanotechnology and wearable intellegent fiber sensors*, Hacettepe University, Ankara, 2006.
- *Multifunctional fiber-based sensors: Future smart fabrics*, Department of Defense, Ankara, 2006.
- *Nanotechnology and wearable intellegent fiber sensors*, Ankara University, Ankara, 2006.
- *Wearable intellegent fiber sensors*, Middle East Technical University, Ankara, 2006.
- *Recent progress in meso-structured fibers and fiber devices*, SPIE Photonics West, San Jose, CA, 2005.
- *Multi-functional fabrics and fabric systems for medical and military applications*, Bilkent University, Ankara, 2005.
- *Thermal-sensing mesoscopic fiber devices by composite material processing*, SPIE Optics East, Boston, MA, 2005.
- *A novel fabrication technique by composite material processing: Multi-functional fabrics and fabric systems for medical and military applications*, Koc University, Istanbul, 2005.
- *Novel optoelectronic fibers and fiber devices: From raw materials to functional devices*, SPIE Optics East, Philadelphia, 2004.
- *Coupled-cavity structures in photonic crystals*, MRS Meeting, San Francisco, CA, 2002.

**8. TEACHING**

- Graduate Courses:
  - PHYS 588 Theoretical and Experimental Foundations of Nanophotonics
  - MSN 517 Fundamentals of Nanoscience
  - MSN 532 Selected Topics in Materials Science and Nanotechnology
- Undergraduate Courses:
  - PHYS 101 General Physics I
  - PHYS 102 General Physics II
  - PHYS 200 Physics for Poets
  - PHYS 230 Quantum Mechanics Laboratory
  - PHYS 371 Numerical Methods in Physics
- Independent Study Supervised:
  - PHYS 491 Senior Project I (7 students)
  - PHYS 492 Senior Project II (3 students)

**9. GRADUATE STUDENT SUPERVISION**

Supervised MS Students:

	<b>Name</b>	<b>Current Institution</b>	<b>Year Graduated</b>	<b>Thesis Title</b>
1	Bekir Türedi	KAUST	2015	Nonlinear optics in nanostructures fiber bundles
2	Urandelger Tuvshindorj	Bonn Üniversitesi	2015	Organically modified silica nanostructures based functional coatings for practical applications
3	E. Fahri Öztürk	Bonn Üniversitesi	2014	Artificial olfaction with hollow core bragg fiber arrays
4	Tamer Doğan	University of Twente	2014	Bio-inspired all-polymer photonic crystal fibers
5	Pınar Beyazkılıç	Bilkent Üniversitesi	2013	Formation of pyrene excimers in mesoporous organically modified silica thin films for visual detection of nitroaromatic explosives
6	Muhammet Halit Dolaş	METU	2013	Light scattering from core-shell nano-structures: Structural coloration
7	Muhammet Çelebi	Tübitak Uzay	2013	Silicon nanocrystal doped polymer nanowire arrays
8	Hüseyin Duman	Roketsan	2013	Design and fabrication of resonant nanoantennas on chalcogenide glasses for nonlinear photonic applications
9	Özlem Köylü	University of Delaware	2011	Polymer/glass hollow-core photonic band gap fibers for infrared laser beam delivery
10	Murat C. Kılınç	Aselsan	2010	Resonant plasmonics nanoantennas

11	Adem Yildirim	University of Colorado Boulder	2009	Aerogel thin films for TNT sensing
12	Kemal Gürel	Garanti Bankası	2009	Coupled surface plasmon structures and applications
13	Y. Nuri Ertuş	UCLA	2009	Microfluidics for plasmonic sensors and electromagnetic applications
14	Mert Vural	University of Maryland, College Park	2009	Hollow core photonic bandgap fibers for medical applications
15	Duygu Akbulut	University of Twente	2009	Lasing action and supercontinuum generation in nano- and micro-structures
16	Özlem Şenlik	Duke University	2008	Micro- and nano-structured devices for thermal analysis and plasmonic applications
17	Ozan Aktaş	Bilkent University	2008	Multi-frequency fluxgate magnetic force microscopy
18	Muhammad Yunusa	Bilkent University	2015	Three-dimensional control of liquid spreading and transport with textured polymer fibers
19	Ahmet Faruk Yavuz	Bilkent University		Large-area triboelectric nanogenerators
20	Orhan Genç	Bilkent University		Silicon micro and nanowires by iterative fiber drawing
21	Mehmet Girayhan Say	Bilkent University	2016	Nanowire and nanoribbons for flexible and bio-inspired electronics applications
22	Abubakar İsa Adamu	Bilkent University		Binary coded identification of industrial chemical vapors with optofluidic nose
23	Abba Usman Saleh	Bilkent University		Rare-earth doped photonic crystal fibers

## Supervised PhD Students:

	Name	Current Institution	Year Graduated	Thesis Title
1	Mehmet Kanık	MIT	2015	Nanostructured materials and devices for sensing and energy harvesting applications
2	Adem Yildirim	University of Colorado Boulder	2014	Nanostructured materials for biological imaging and chemical sensing
3	Erol Özgür	Bilkent University	2014	Design and development of novel large scale applications in micro/nanophotonics and nanobiotechnology
4	Ozan Aktaş	Bilkent University	2014	Chalcogenide micro and nanostructures and applications
5	Tural Khudiyev	MIT	2013	Fabrication of core-shell nanostructures for photonics applications

6	Hülya Budunoğlu	Aselsan	2012	Organically modified silica based nanomaterials for functional surfaces
7	Bihter Dağlar	Bilkent University		AAO membranes for nanoscale templates, ordered arrays and surfaces
8	Pınar Beyazkılıç	Bilkent University		Nanomaterials for chemical/biomedical sensing and functional surface applications
9	Ersin Hüseyinoğlu	Bilkent University		Utilization of whispering gallery mode chalcogenide resonators for nonlinear and lasing applications
10	Pelin Tören	Austria	2016	Biological sensing applications of ultra high quality factor microtoroidal optical resonators with high sensitivity and selectivity

## 10. PATENTS

- Piezoelectricity PVDF Materials and Method for Making the Same, Turkey, USA, Patent Application No. 14828524, August, 2015, Mehmet Kanik (Patent Pending).
- Cellulose Based Sensor for Detection of Nitroaromatic Explosives, Turkey, Patent Application No. 2015/04051, April, 2015, Gokcen Birlik Demirel and Bihter Daglar (Patent Pending)
- *Thermal sensing fiber devices*, M. Bayindir, F. Sorin, A. F. Abouraddy, O. Shapira, J. Arnold, Y. Fink, and J. D. Joannopoulos, U.S. Patent No: 7567740, Issued: Jul. 28, 2009. ( *licensed* )
- *Optoelectronic fiber codrawn from conducting, semiconducting, and insulating materials*, M. Bayindir, F. Sorin, D. S. Hinczewski, S. D. Hart, Y. Fink, and J. D. Joannopoulos, U.S. Patent No: 7295734, Issued: Nov. 13, 2007. ( *licensed* )
- *Optoelectronic fiber photodetector*, M. Bayindir, F. Sorin, A. F. Abouraddy, D. S. Hinczewski, O. Shapira, J. Arnold, J. F. Viens, Y. Fink, and J. D. Joannopoulos U.S. Patent No: 7292758, Issued: Nov. 6, 2007. ( *licensed* )
- *Piezoelectric fibers*, Mehmet Bayindir, A. F. Abouraddy, J. D. Joannopoulos, and Y. Fink (pending, filed 2005).
- *Integrated fibres for self-monitored optical transport*, Mehmet Bayindir, O. Shapira, D. S. Hinczewski, J. Viens, A. F. Abouraddy, J. D. Joannopoulos, and Y. Fink (pending, filed 2005).

## 11. SCHOLARLY PUBLICATIONS

### Ph.D. Dissertation

- Mehmet Bayindir, Physics and Applications of Coupled-Cavity Structures in Photonic Crystals, Bilkent University, 2002.



**Published Books**

- Mehmet Bayindir, *Mekanik Problemleri (Challenging problems in classical mechanics)*, (in Turkish) (263 pages, 4<sup>th</sup> printing, TUBITAK, Ankara, 2001).

**Reviews**

- P. Toren, E. Ozgur, and Mehmet Bayindir, *Oligonucleotide based label-free detection with optical microresonators: Strategies and challenges*, Lab on a Chip, volume 16, page 2572 (2016).
- A. F. Abouraddy, M. Bayindir, G. Benoit, S. D. Hart, K. Kuriki, N. Orf, O. Shapira, F. Sorin, B. Temelkuran, Y. Fink, *Towards multimaterial multifunctional fibres that see, hear, sense and communicate*, Nature Materials, volume 6, page 336 (2007).
- Mehmet Bayindir et al., *Kilometer-long ordered nanophotonic devices by preform-to-fiber fabrication*, IEEE Selected Topics in Quantum Electronics, Nanophotonics special issue, volume 12, 1202 (2006).

**Articles in refereed journals (SCI journals)**

- M. Kanik, M. Marcali, M. Yunusa, C. Elbuken, and Mehmet Bayindir, Self-powered triboelectric microfluidic fiber devices for chemical and biological sensing, Advanced Materials Technologies, (2016).
- A. I. Adamu, F. E. Ozturk, and Mehmet Bayindir, Binary coded identification of industrial chemical vapors with an optofluidic nose, Applied Optics, Revised (2016).
- P. Toren, E. Ozgur and Mehmet Bayindir, Label-free optical biodetection of pathogen virulence factors in complex media using microtoroids with multifunctional surface functionality, Analytical Chemistry, Under Review (2016).
- M. Yunusa, F. E. Ozturk, A. Yildirim, U. Tuvshindorj, M. Kanik, and Mehmet Bayindir, Bioinspired polymer fibers for anisotropic non-wetting surfaces, ACS Applied Materials and Interfaces, Under Review (2016).
- P. Toren, E. Ozgur, and Mehmet Bayindir, Oligonucleotide based label-free detection with optical microresonators: Strategies and challenges, Lab on a Chip, volume 16, page 2572 (2016).
- P. Beyazkilic, U. Tuvshindorj, A. Yildirim, Caglar Elbuken, and Mehmet Bayindir, Robust superhydrophilic patterning of superhydrophobic ORMOSIL surfaces for high-throughput on-chip screening applications, RSC Advances, volume 6, page 80049 (2016).

- A. Yildirim, M. Turkydin, B. Garipcan, and Mehmet Bayindir, Cytotoxicity of multifunctional surfactant containing capped mesoporous silica nanoparticles for combined chemotherapy and photodynamic therapy, RSC Advances, volume 6, page 32060 (2016).
- M. Kanik, M. G. Say, B. Daglar, A. F. Yavuz, M. Dolas, M. El-Ashry, M. Bayindir, "A Motion and sound activated, 3d printed, chalcogenide based triboelectric nanogenerator", Advanced Materials, vol. 27, 2367-2376, 2015. ( Cover story )
- E. Ozgur, P. Toren, O. Aktas, E. Huseyinoglu, M. Bayindir, "Label-free biosensing with high selectivity in complex media using microtoroidal optical resonators", Scientific Reports, volume 5, 13173 (2015).
- A. Yildirim and Mehmet Bayindir, Porosity difference based selective dissolution strategy to prepare shape-tailored hollow mesoporous silica nanoparticles, Journal of Materials Chemistry A, volume 3, page 3839 (2015).
- T. Khudiyev, M. Bayindir, "Nanospring harvest light more efficiently," Applied Optics, vol. 54, 8018 (2015).
- P. Toren, E. Ozgur, M. Bayindir, "Real-time and selective detection of single nucleotide DNA mutations using surface engineered microtoroids," Analytical Chemistry, volume 87, 10920 (2015).
- T. G. Ulusoy, B. Daglar, A. Yildirim, A. Ghobadi, M. Bayindir, and A. K. Okyay, "Enhanced performance of dye-sensitized solar cells by omnidirectional antireflective coatings", Journal of Photonics for Energy, volume 5, 053090 (2015).
- M. Kanik, O. Aktas, H. S. Sen, E. Durgun, and Mehmet Bayindir, Spontaneous high piezoelectricity in Poly (vinylidene fluoride) nanoribbons produced by iterative thermal size reduction technique, ACS Nano, volume 8, page 9311 (2014).
- T. Khudiyev, and Mehmet Bayindir, Superenhancers: Novel opportunities for nanowire optoelectronics, Scientific Reports, volume 4, page 7505 (2014).
- P. Beyazkilic, A. Yildirim, and Mehmet Bayindir, Nanoconfinement of pyrene in mesostructured silica nanoparticles for trace detection of TNT in aqueous phase, Nanoscale, volume 6, page 15203 (2014).

- B. Daglar, G. B. Demirel, T. Khudiyev, T. Dogan, O. Tobail, S. Altuntas, F. Buyukserin, and Mehmet Bayindir, Anemone-like nanostructures for non-lithographic, reproducible, large-area, and ultra-sensitive SERS substrates, Nanoscale, volume 6, page 12710 (2014).
- F. E. Ozturk, A. Yildirim, M. Kanik, and Mehmet Bayindir, Photonic bandgap narrowing in conical hollow core Bragg fibers, Applied Physics Letters, volume 105, no 071102 (2014).
- E. Ozgur, P. Toren, and Mehmet Bayindir, Phosphonate based organosilane modification for a simultaneously protein resistant and bioconjugable silica surface, Journal of Materials Chemistry B, volume 2, page 7118 (2014).
- T. Khudiyev, O. Tobail, and Mehmet Bayindir, Tailoring self-organized nanostructured morphologies in kilometer-long polymer fiber, Scientific Reports, volume 4, article number 4864 (2014).
- T. Khudiyev, T. Dogan, and Mehmet Bayindir, Biomimicry of multifunctional nanostructures in the neck feathers of mallard (*Anas platyrhynchos* L.) drakes, Scientific Reports, volume 4, article number 4718 (2014).
- T. Khudiyev, E. Huseyinoglu, and Mehmet Bayindir, Non-resonant Mie scattering: Emergent optical properties of core-shell polymer nanowires, Scientific Reports, volume 4, article number 4607 (2014).
- A. Yildirim, M. Yunusa, F. E. Ozturk, M. Kanik, and Mehmet Bayindir, Surface textured polymer fibers for microfluidics, Advanced Functional Materials, volume 24, page 4569 (2014).
- O. Aktas, E. Ozgur, O. Tobail, M. Kanik, E. Huseyinoglu, and Mehmet Bayindir, A new route of fabricating on-chip chalcogenide microcavity resonator array, Advanced Optical Materials, volume 2, page 618 (2014).
- P. Beyazkilic, A. Yildirim, and Mehmet Bayindir, Formation of pyrene excimers in mesoporous ormosil thin films for visual detection of nitro-explosives, ACS Applied Materials and Interfaces, volume 6, page 4997 (2014).
- A. Yildirim and Mehmet Bayindir, Turn-on fluorescent dopamine sensing based on in situ formation of visible light emitting polydopamine nanoparticles, Analytical Chemistry, volume 86, page 5508 (2014).

- U. Tuvshindorj, A. Yildirim, F. E. Ozturk, and Mehmet Bayindir, Robust Cassie state of wetting in transparent superhydrophobic coating, *ACS Applied Materials and Interfaces*, volume 6, page 9680 (2014)
- T. Khudiyev and Mehmet Bayindir, Superenhancers: Novel opportunities for nanowire optoelectronics, under review (2014)
- M. Yunusa, F. E. Ozturk, A. Yildirim, U. Tuvshindorj, M. Kanik, and Mehmet Bayindir, Hierarchically structured polymer fibers for anisotropic non-wetting surfaces, Submitted (2014).
- T. Khudiyev and Mehmet Bayindir, Nanosprings harvest light more efficiently, Submitted (2014).
- M. Celebi and Mehmet Bayindir, Indefinitely-long silicon quantum dot embedded polymer nanowire array by iterative size reduction technique, to be submitted (2014).
- T. Khudiyev, Y. Cetin, T. Dogan, and Mehmet Bayindir, Fabrication of multifunctional all-polymer monolayer nanowires for absorption enhancement applications, to be submitted (2014).
- G. B. Demirel, T. Dogan, M. Celebi, and Mehmet Bayindir, Magnetic nanoparticle-doped polymer fibers array produced by iterative size reduction technique, (2014).
- A. Yildirim, F. E. Ozturk and Mehmet Bayindir, *A hollow-core infrared fiber array based optoelectronic nose for discrimination of ethanol and methanol in complex environments*, *Analytical Chemistry*, volume 85, page 6384 (2013).
- B. Daglar, T. Khudiyev, G. B. Demirel, F. Buyukserin, and Mehmet Bayindir, *Soft biomimetic tapered nanostructures for large-area antireflective surfaces and SERS sensing*, *Journal of Material Chemistry B*, volume 1, page 7842 (2013).
- A. Yildirim, G. B. Demirel, R. Erdem, B. Senturk, T. Tekinay, and Mehmet Bayindir, *Pluronic polymer capped biocompatible mesoporous silica nanocarriers*, *Chemical Communications*, volume 49, page 9782 (2013).
- G. B. Demirel, B. Daglar, and Mehmet Bayindir, *Extremely fast and highly selective detection of nitroaromatic explosive vapours by fluorescent polymer thin film*, *Chemical Communications*, vol. 49, 6140 (2013).
- F. B. Atar, E. Battal, L. E. Aygün, B. Dağlar, Mehmet Bayindir, and Ali K. Okyay, *Plasmonically enhanced hot electron based photovoltaic device*, *Optics Express*, volume 21, page 7196 (2013).

- A. Yildirim, T. Khudiyev, B. Daglar, A. K. Okyay, and Mehmet Bayindir, *Superhydrophobic and omnidirectional antireflective surfaces from nanostructured ormosil colloids*, ACS Applied Materials and Interfaces, volume 5, page 853 (2013) ( *Highlighted in 2012 MRS Fall Meeting: Meeting Scene* ).
- A. Yildirim, E. Ozgur, and Mehmet Bayindir, *Impact of mesoporous silica nanoparticle surface functionality on hemolytic activity, thrombogenicity and non-specific protein adsorption*, Journal of Material Chemistry B, volume 1, page 1909 (2013).
- E. Ozgur, O. Aktas, M. Yaman, and Mehmet Bayindir, *Macroscopic assembly of indefinitely long and parallel nanowires into large area photodetection*, Nano Letters, volume 12, page 2483 (2012) ( *Selected in Optics 2012* ).
- H. Budunoglu, A. Yildirim, and Mehmet Bayindir, *Flexible and mechanically stable antireflective coatings from nanoporous organically modified silica colloids*, Journal of Materials Chemistry, volume 22, page 9671 (2012).
- M. Yaman, A. Yildirim and Mehmet Bayindir, *High selectivity binary logic olfaction using narrow-band hollow core photonic band gap fibers*, Analytical Chemistry, volume 84, page 83 (2012).
- M. Yaman, T. Khudiyev, E. Ozgur, M. Kanik, O. Aktas, E. O. Ozgur, H. Deniz, E. Korkut, Mehmet Bayindir, *Arrays of indefinitely-long, uniform nanowire and nanotube*, Nature Materials, volume 10, page 494 (2011) ( *Selected as cover* ).
- A. Yildirim, M. Vural, M. Yaman, and Mehmet Bayindir, *Bio-inspired optoelectronic nose with nanostructured wavelength scalable hollow-core infrared fibers*, Advanced Materials, volume 23, page 1262 (2011) ( *Selected as frontispiece* ).
- T. Khudiyev, E. Ozgur, M. Yaman and Mehmet Bayindir, *Size-dependent structural coloring in large scale core-shell nanowires*, Nano Letters, volume 11, page 4661 (2011).
- A. Yildirim, H. Budunoglu, M. Yaman, M. O. Guler and Mehmet Bayindir, *Template free preparation of nanoporous organically modified silica thin films on flexible substrates*, Journal of Materials Chemistry, volume 21, 14830 (2011).
- A. Yildirim, H. Acar, T. S. Erkal, Mehmet Bayindir, and M. O. Guler, *Template-directed synthesis of silica nanotubes for explosive detection*, ACS Applied Materials and Interfaces, volume 3, page 4159 (2011).

- H. Deniz, T. Khudiyev, F. Buyukserin and Mehmet Bayindir, *Room temperature large-area nanoimprinting for broadband biomimetic antireflection surfaces*, Applied Physics Letters, volume 99, page 183107 (2011).
- A. Yildirim, H. Budunoglu, B. Daglar, H. Deniz, and Mehmet Bayindir, *One-pot preparation of fluorinated mesoporous silica nanoparticles for liquid marble formation and superhydrophobic surfaces*, ACS Applied Materials and Interfaces, volume 3, page 1804 (2011).
- H. Budunoglu, A. Yildirim, M. O. Guler, and Mehmet Bayindir, *Highly transparent, flexible and thermally stable superhydrophobic ORMOSIL aerogel thin films*, ACS Applied Materials and Interfaces, volume 3, page 539 (2011).
- A. Yildirim, H. Budunoglu, H. Deniz, M. O. Guler, and Mehmet Bayindir, *Template free synthesis of organically modified silica mesoporous thin films for tnt sensing*, ACS Applied Materials Interfaces, volume 2, page 2892 (2010).
- H. E. Kondakci, M. Yaman, A. Dana, and Mehmet Bayindir, *Photonic band gap infrared spectrometer*, Applied Optics, volume 49, page 3596 (2010).
- M. Yaman, H. E. Kondakci, and Mehmet Bayindir, *Large and dynamical tuning of a chalcogenide Fabry-Perot cavity mode by temperature modulation*, Optics Express, volume 18, page 3168 (2010).
- T. S. Kasirga, Y. N. Ertas, and Mehmet Bayindir, *Microfluidics for reconfigurable electromagnetic metamaterials*, Applied Physics Letters, volume 95, page 214102 (2009).
- B. Kaplan, H. Guner, O. Senlik, K.Gurel, Mehmet Bayindir, and A. Dana, *Tuning optical discs for plasmonic applications*, Plasmonics, volume 4, page 237 (2009).
- K.Gurel, B. Kaplan, H. Guner, Mehmet Bayindir, and A. Dana, *Resonant transmission of light through surface plasmon structures*, Applied Physics Letters, volume 94, page 233102 (2009).
- A. Tulek, D. Akbulut, and Mehmet Bayindir, *Ultralow threshold laser action from toroidal polymer microcavity*, Applied Physics Letters, volume 94, page 203302 (2009).
- T. Ozdemir, S. Atilgan, I. Kutuk, L. T. Yildirim, A. Tulek, Mehmet Bayindir, and E. U. Akkaya, *Solid state emissive BODIPY dyes with bulky substituents as spacers*, Organic Letters, volume 11, page 2105 (2009).

- H. E. Kondakci, M. Yaman, O. Koylu, A. Dana, and Mehmet Bayindir, *All-chalcogenide glass omnidirectional photonic band gap variable infrared filters*, Applied Physics Letters, volume 94, page 111110 (2009).
- A. F. Abouraddy, M. Bayindir, G. Benoit, S. D. Hart, K. Kuriki, N. Orf, O. Shapira, F. Sorin, B. Temelkuran, Y. Fink, *Towards multimaterial multifunctional fibres that see, hear, sense and communicate*, Nature Materials, volume 6, page 336 (2007).
- Mehmet Bayindir et al., *Kilometer-long ordered nanophotonic devices by preform-to-fiber fabrication*, IEEE Selected Topics in Quantum Electronics, Nanophotonics special issue, volume 12, 1202 (2006) (Invited review paper).
- A. F. Abouraddy, O. Shapira, Mehmet Bayindir, J. Arnold, J. D. Joannopoulos, and Y. Fink, *Large-scale optical-field measurements with geometric fibre constructs*, Nature Materials, volume 5, page 532 (2006).
- Mehmet Bayindir, A. F. Abouraddy, J. D. Joannopoulos, and Y. Fink, *Thermal-sensing fiber devices by multimaterial codrawing*, Advanced Materials, volume 18, page 845 (2006).
- Mehmet Bayindir, O. Shapira, D. S. Hinczewski, J. Viens, A. F. Abouraddy, J. D. Joannopoulos, and Y. Fink, *Integrated fibres for self-monitored optical transport*, Nature Materials, volume 4, 820 (2005).
- E. Ozbay, K. Aydin, E. Cubukcu, and Mehmet Bayindir, *Physics and applications of photonic nanocrystals*, International Journal of Nanotechnology, Volume 1, page 379 (2004).
- Mehmet Bayindir, F. Sorin, A. F. Abouraddy, J. Viens, S. D. Hart, J. D. Joannopoulos, and Y. Fink, *Metal-insulator-semiconductor optoelectronic fibres*, Nature, volume 431, page 826 (2004).
- K. Kuriki, O. Shapira, S. D. Hart, G. Benoit, Y. Kuriki, J. F. Viens, Mehmet Bayindir, J. D. Joannopoulos, and Y. Fink, *Hollow multilayer photonic bandgap fibers for NIR applications*, Optics Express, volume 12, page 1510 (2004).
- E. Ozbay, K. Aydin, E. Cubukcu, and Mehmet Bayindir, *Transmission and reflection properties of composite double negative metamaterials in free space*, IEEE Trans. Antennas Propag., volume 51, page 2592 (2003).

- Mehmet Bayindir and E. Ozbay, *Dropping of electromagnetic waves through localized modes in three-dimensional photonic band gap structures*, Applied Physics Letters, volume 81, page 4514 (2002).
- Mehmet Bayindir and E. Ozbay, *Band-dropping via coupled photonic crystal waveguides*, Optics Express, volume 10, page 1279 (2002).
- E. Ozbay, Mehmet Bayindir, I. Bulu, and E. Cubukcu, *Investigation of localized coupled-cavity modes in two-dimensional photonic band gap structures*, IEEE Journal of Quantum Electronics, volume 38, page 837 (2002).
- Mehmet Bayindir, K. Aydin, E. Ozbay, P. Markos, and C. M. Soukoulis, *Transmission properties of composite metamaterials in free space*, Applied Physics Letters, volume 81, page 120 (2002).
- Mehmet Bayindir, C. Kural, and E. Ozbay, *Coupled optical microcavities in one-dimensional photonic band gap structures*, Journal of Optics A: Pure and Applied Optics, volume 3, page 184 (2001).
- Mehmet Bayindir, E. Cubukcu, I. Bulu, T. Tut, E. Ozbay, C. M. Soukoulis, *Photonic band gaps defect characteristics, and waveguiding in two-dimensional disordered dielectric and metallic photonic crystals*, Physics Review B, volume 64, no 195113 (2001).
- R. Biswas, E. Ozbay, B. Temelkuran, Mehmet Bayindir, M. M. Sigalas, and K.-M. Ho, *Exceptionally directional sources with photonic band gap materials*, Journal of Optical Society of America B, volume 18, page 1684 (2001).
- Mehmet Bayindir, E. Cubukcu, I. Bulu, and E. Ozbay, *Photonic band gaps and localization in two-dimensional metallic quasicrystals*, Europhysics Letters, volume 56, page 41 (2001).
- Mehmet Bayindir, S. Tanriseven, A. Aydinli, and E. Ozbay, *Strong enhancement of spontaneous emission in hydrogenated amorphous-silicon-nitride coupled-microcavity structures*, Applied Physics A: Material Science & Processing (Rapid Communications), volume 73, page 125 (2001).
- Mehmet Bayindir, E. Cubukcu, I. Bulu, and E. Ozbay, *Photonic band gap effect, localization, and waveguiding in two-dimensional Penrose lattice*, Physical Review B (Rapid Communications), volume 63, 161104(R) (2001).



- Mehmet Bayindir, E. Ozbay, B. Temelkuran, M. M. Sigalas, C. M. Soukoulis, R. Biswas, K. M. Ho, *Guiding, bending, and splitting of electromagnetic waves in highly confined photonic crystal waveguides*, Physical Review B (Rapid Communications), volume 63, page 081107(R) (2001).
- Mehmet Bayindir and B. Tanatar, *Bose-Einstein condensation of noninteracting charged Bose gas in the presence of external potentials*, Physica B, volume 293, page 283 (2001).
- B. Temelkuran, Mehmet Bayindir, E. Ozbay, J. P. Kavanaugh, M. M. Sigalas, and G. Tuttle, *Quasi-metallic silicon micromachined photonic crystals*, Applied Physics Letters, volume 78, page 264 (2001).
- Mehmet Bayindir, S. Tanriseven, and E. Ozbay, *Propagation of light through localized coupled-cavity modes in one-dimensional photonic band-gap structures*, Applied Physics A: Material Science & Processing (Rapid Communications), volume 72, page 117 (2001).
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Photonic-crystal-based beam splitters*, Applied Physics Letters, volume 77, page 3902 (2000).
- Mehmet Bayindir and E. Ozbay, *Heavy photons at coupled-cavity waveguide band edges in a three-dimensional photonic crystal*, Physical Review B (Rapid Communications), volume 62, page 2247 (2000).
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Propagation of photons via hopping: a novel waveguiding mechanism through localized coupled-cavities in three-dimensional photonic crystals*, Physical Review B (Rapid Communications), volume 61, page R11855 (2000).
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Tight-binding description of the coupled defect modes in three-dimensional photonic crystals*, Physical Review Letters, volume 84, page 2140 (2000).
- B. Temelkuran, Mehmet Bayindir, and Ekmel Ozbay, R. Biswas, M. M. Sigalas, G. Tuttle, and K. M. Ho, *Photonic crystal-based resonant antenna with a very high directivity*, Journal of Applied Physics (Communications), volume 67, page 603 (2000).
- Z. Gedik and Mehmet Bayindir, *Disorder and localization in lowest Landau level*, Solid State Communications, volume 112, page 157 (1999).

- Mehmet Bayindir and Z. Gedik, *Suppression of superconductivity in high-Tc cuprates due to nonmagnetic impurities: Implications for the orderparameter symmetry*, The European Physical Journal B, volume 10, page 287 (1999).
- Mehmet Bayindir, B. Tanatar, and Z. Gedik, *Bose-Einstein condensation in a one-dimensional interacting system due to power-law traps*, Physical Review A, volume 59, page 1468 (1999).
- Mehmet Bayindir and B. Tanatar, *Bose-Einstein condensation in a two-dimensional, trapped, interacting gas*, Physical Review A, volume 58, page 3134 (1998).
- Z. Gedik and Mehmet Bayindir, *Energy spectrum for two-dimensional potentials in very high magnetic fields*, Physical Review B, volume 56, page 12088 (1997).

#### Articles in non-refereed or general journals

- E. Ozgur, O. Aktas, Mehmet Bayindir, *Manually Assembled Macroscopic Nanowire Image Sensor*, Optics & Photonic News, Optics in 2012, December issue, page 36 (2012).
- A. F. Abouraddy, O. Shapira, Mehmet Bayindir, J. Arnold, J. D. Joannopoulos, and Y. Fink, *Fabrics that "See": Photosensitive Fiber Constructs*, Optics & Photonic News, Optics in 2006, December issue, page 21 (2006).
- Mehmet Bayindir, A. F. Abouraddy, F. Sorin, J. D. Joannopoulos, and Y. Fink, *Fiber photodetectors codrawn from conducting, semiconducting, and insulating materials*, Optics & Photonic News, December issue, page 24 (2004).
- Mehmet Bayindir and E. Ozbay, *Propagation photons by hopping*, Optics & Photonic News, Optics in 2000, page 31, December issue (2000).

#### Refereed proceedings

- Mehmet Bayindir, M. Yaman, E. Ozgur, O. Aktas, T. Khudiyev, M. Kanik, H. Deniz, *Macroscopic Photoconductive Nanowire Arrays*, OMN 2011:International Conference on Optical MEMS & Nanophotonics, Istanbul, August 8-12, 2011.
- M. Yaman, A. Yildirim, Mehmet Bayindir, *Artificial Olfaction Inside Nanostructured Infrared Fiber Arrays*, OMN 2011:International Conference on Optical MEMS & Nanophotonics, Istanbul, August 8-12, 2011.

- Mehmet Bayindir, M. Yaman, M. Kanik, E. Ozgur, T. Khudiyev, O. Aktas, E. O. Ozgur, H. Deniz, E. Korkut, *A Novel High-Throughput Nanofabrication Technique for Producing Indefinitely Long, Uniform Nanostructures*, Nanotech 2011, Boston/USA.
- Mehmet Bayindir, Adem Yildirim, Hulya Budunoglu, Mecit Yaman, Hakan Deniz and Mustafa O. Guler, *Nano-structured Organically Modified Silica Thin Films for Functional Surfaces*, Nanotech 2011, Boston/USA.
- Mehmet Bayindir, Adem Yildirim, Mecit Yaman, Mert Vural, *Bio-inspired Optoelectronic Digital Nose for Breath Analysis*, Nanotech 2011, Boston/USA.
- H. E. Kondakci, M. Yaman, O. Koylu, A. Dana, Mehmet Bayindir, *All-chalcogenide variable infrared filter*, SPIE Proceedings (2009).
- D. Akbulut, A. Tulek, M. Bayindir, *Generation of new frequencies in toroid microcavities*, ICTON 2008, Greece, pages 260-263 (2008).
- M. Bayindir, A. F. Abouraddy, O. Shapira, J. Viens, J. D. Joannopoulos, Y. Fink, *A novel fabrication technique by composite material processing: Integrated metal-insulator-semiconductor fibers and fiber devices*, Materials Research society symposium proceedings, volume:888, pages: 359-364 (2006).
- M. Bayindir, F. Sorin, A. F. Abouraddy, J. Viens, S. D. Hart, J. D. Joannopoulos, Y. Fink, *Novel optoelectronic fibers codrawn from conducting semiconducting and insulating materials*, Conference on Lasers & Electro-Optics (CLEO), Baltimore, MD, pages 1686-1687 (2005).
- K. Kuriki, O. Shapira, S. D. Hart, G. Benoit, Y. Kuriki, J. Viens, M. Bayindir, J. D. Joannopoulos, Y. Fink, *Hollow multilayer photonic bandgap fibers for NIR applications*, LEOS Topical Meeting on Photonic Crystals and Holey Fibers, Vancouver, Canada (2003).
- E. Ozbay, B. Temelkuran, and Mehmet Bayindir, *Microwave applications of photonic crystals*, Progress in Electromagnetics Research, PIER 41, pages 185–209 (2003).
- E. Ozbay and Mehmet Bayindir, *Physics and applications of defect structures in photonic crystals*, NATO Science Series, Quantum Communication and Information Technologies, Ed. by A. S. Shumovsky and V. I. Rupasov, pages 273–299 (Kluwer Academic Publishers, Dordrecht, 2003).
- K. Aydin, Mehmet Bayindir, and E. Ozbay, *Microwave transmission through metamaterials in free space*, QELS 2002 Technical Digest, page 12 (CLEO/QELS Meeting, May 19-24, Long Beach, CA).

- Mehmet Bayindir, S. S. Akarca, and E. Ozbay, *Photonic band gap structures for WDM applications*, QELS 2002 Technical Digest, page 84 (CLEO/QELS Meeting, May 19-24, Long Beach, CA).
- Mehmet Bayindir and E. Ozbay, *Coupled-cavity structures in photonic crystals*, Material Research Society 2002, (MRS Meeting, April 1-5, San Francisco, USA).
- R. Biswas, E. Ozbay, B. Temelkuran, Mehmet Bayindir, M. M. Sigalas, and K.-M. Ho, *Applications of photonic crystals to directional antennas*, NATO Science Series, Photonic crystal and Light Localization in the 21st Century, Ed. by C. M. Soukoulis, pages 321-329 (Kluwer Academic Publishers, Dordrecht, 2001).
- E. Ozbay, B. Temelkuran, and Mehmet Bayindir, *Physics and applications of photonic crystals*, NATO Science Series, Photonic crystal and Light Localization in the 21st Century, Ed. by C. M. Soukoulis, pages 279-305 (Kluwer Academic Publishers, Dordrecht, 2001).
- Mehmet Bayindir and E. Ozbay, *Propagation of photons via hopping: a novel waveguiding mechanism through coupled-cavities in three-dimensional photonic crystals*, in the proceedings of ESTEC.
- Mehmet Bayindir, E. Ozbay, B. Temelkuran, M. M. Sigalas, C. M. Soukoulis, R. Biswas, and K. M. Ho, *Experimental demonstration of highly confined photonic crystal based waveguides*, QELS 2001 Technical Digest, page 129 (CLEO/QELS Meeting, May 6-11, Baltimore).
- Mehmet Bayindir, S. Tanriseven, A. Aydinli, and E. Ozbay, *Strong enhancement of spontaneous emission in hydrogenated amorphous silicon nitride coupled-microcavity structures*, CLEO 2001 Technical Digest, page 176 (CLEO/QELS Meeting, May 6-11, Baltimore).
- Mehmet Bayindir, E. Cubukcu, I. Bulu, and E. Ozbay, *Photonic band gap effect and localization in two-dimensional Penrose lattice*, QELS 2001 Technical Digest, page 122 (CLEO/QELS Meeting, May 6-11, Baltimore).
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Guiding and bending of photons via hopping in three dimensional photonic crystals*, in the proceedings of CLEO 2000 Meeting, May 7-12, 2000, San Francisco.
- B. Temelkuran, Mehmet Bayindir, E. Ozbay, J. P. Kavanaugh, M. M. Sigalas, and G. Tuttle, *Highly doped silicon micromachined photonic crystals*, in the proceedings of CLEO 2000 Meeting, May 7-12, 2000, San Francisco.

- Mehmet Bayindir and I. O. Kulik, *Persistent current in a mesoscopic ring with strongly coupled polarons*, in *Quantum Mesoscopic Phenomena and Mesoscopic Devices in Microelectronics*, ed. by I. O. Kulik and R. Ellialtıoglu (NATO/ASI series, Kluwer, Dordrecht, 2000), page 283.
- B. Temelkuran, Mehmet Bayindir, and E. Ozbay, *Physics and applications of photonic crystals*, in *Quantum Mesoscopic Phenomena and Mesoscopic Devices in Microelectronics*, ed. by I. O. Kulik and R. Ellialtıoglu (NATO/ASI series, Kluwer, Dordrecht, 2000), page 467.
- Ekmele Ozbay, Burak Temelkuran, Mehmet Bayindir, R. Biswas, M.M. Sigalas, G. Tuttle, and K.M. Ho, *Highly directional resonant antennas built around photonics crystals*, in the proceedings of IEEE/LEOS Meeting, 558, San Francisco, 8-10 November 1999.

#### **Published conference abstracts (or extended abstracts)**

- A. Yildirim, F. E. Ozturk and M. Bayindir, "Smelling in Chemically Complex Environments: A Compact Optoelectronic Nose for Methanol Adulterated Beverages", ACS Fall Meeting, Indianapolis, USA, September 8 - 12, 2013.
- A. Yildirim, G. B. Demirel and M. Bayindir, "Improved Biocompatibility and Water Dispersibility of Pluronic Polymer Capped Mesoporous Silica Nanoparticle Drug Carriers", ACS Fall Meeting, Indianapolis, USA, September 8 - 12, 2013.
- M. Kanik and M. Bayindir, "A Unique Method for Fabrication of Square Cross-Sectional All Polymer Core-Shell Multifunctional Nanostructures", MRS Fall, Boston, USA, November 25 - 29, 2012.
- T. Khudiyev, M. Bayindir, "Structural coloring of all polymer core-shell nanowires", MRS Fall Meeting 2012, Boston, USA, November 25-29, 2012.
- E. Ozgur, O. Aktas, Mehmet Bayindir, "Macroscopic Nanowire Photodetection Circuitry", 2012 MRS Fall Meeting & Exhibit, Boston, MA, November 25-30, 2012.
- B. Daglar, H. Deniz, T. Khudiyev, F. Buyukserin, M. Bayindir, "Room temperature Large-Area Nanoimprinting of Tapered Hydrogen Silsesquioxane Nanowires for Broadband Biomimetic Antireflection Surfaces", MRS 2012 Fall, Boston, MA, November 25-30, 2012.
- A. Yildirim, M. Ghaffari, T. Khudiyev, B. Daglar, H. Budunoglu, A. K. Okyay, M. Bayindir, "Large-area Multifunctional Nanoporous Coatings for photovoltaics" 2012 MRS Fall Meeting & Exhibition, Boston, MA, November 25 - 30, 2012
- E. Özgür, "Large Area Nanowire Photodetection Circuitry, NanoTR 8: Nanoscience and Nanotechnology Conference, Istanbul, 25-29 June , 2012.

- H. Duman, B. Dağlar, M. C. Kılınç, T. Khudiyev, M. Bayındır, "New Frequency Generation with Plasmonic Nanoantenna on High Nonlinear AS<sub>2</sub>SE<sub>3</sub> Glass Substrate", NanoTR 8: Nanoscience and Nanotechnology Conference, Istanbul, 25-29 June , 2012.
- P. Beyazkılıç, A. Yıldırım, M. Bayındır, "Hierarchically Porous Organically Modified Silica Thin Films for Rapid TNT Sensing", NanoTR 8: Nanoscience and Nanotechnology Conference, Istanbul, 25-29 June , 2012.
- T.Ç. Cinkara, O. Aktaş, M. Bayındır, "Phase Change Nanowires", NanoTR 8: Nanoscience and Nanotechnology Conference, Istanbul, 25-29 June , 2012.
- M. Kanık, T. Khudiyev, M. Bayındır, "Fabrication of All Polymer Core-Shell Nanostructures", NanoTR 8: Nanoscience and Nanotechnology Conference, Istanbul, 25-29 June , 2012.
- A. Yildirim, E. Ozgur, Mehmet Bayindir, "Effect of Mesoporous Silica Nanoparticle Surface Functionalization on Toxicity to Red Blood Cells, Thrombogenicity and Protein Adsorption", TOXI 2012: 244th American Chemical Society National Meeting & Exposition, Philadelphia, PA, August 19-23, 2012.
- A. Yildirim, M. Sardan, R. Genc, M. Kılınç, S. Sulek, A. B. Tekinay, Mehmet Bayindir, M. O. Guler "Improved Solubility and Biocompatibility of Peptide Coated Magnetic Mesoporous Silica Nanoparticle Theranostic Agents", COLL 2012: 244th American Chemical Society National Meeting & Exposition, Philadelphia, PA, August 19-23, 2012.
- A. Yildirim, M. Ghaffari, T. Khudiyev, B. Daglar, H. Budunoglu, A. Okyay, Mehmet Bayindir "Omnidirectional Antireflective and Mechanically Stable Superhydrophobic Surfaces from Nanostructured Ormosil Colloids", COLL 2012: 244th American Chemical Society National Meeting & Exposition, Philadelphia, PA, August 19-23, 2012.
- Mehmet Bayindir, M. Yaman, E. Ozgur, O. Aktas, T. Khudiyev, M. Kanik, H. Deniz, "Macroscopic Photoconductive Nanowire Arrays", OMN 2011:International Conference on Optical MEMS & Nanophotonics, Istanbul, August 8-12, 2011.
- M. Yaman, A. Yildirim, Mehmet Bayindir, "Artificial Olfaction Inside Nanostructured Infrared Fiber Arrays", OMN 2011:International Conference on Optical MEMS & Nanophotonics, Istanbul, August 8-12, 2011.
- Mehmet Bayindir, M. Yaman, M. Kanik, E. Ozgur, T. Khudiyev, O. Aktas, E. O. Ozgur, H. Deniz, E. Korkut, "A Novel High-Throughput Nanofabrication Technique for Producing Indefinitely Long, Uniform Nanostructures", Nanotech'2011, Boston/USA, June 13-16, 2011.

- Mehmet Bayindir, Adem Yildirim, Hulya Budunoglu, Mecit Yaman, Hakan Deniz and Mustafa O. Guler, "Nano-structured Organically Modified Silica Thin Films for Functional Surfaces", Nanotech'2011, Boston/USA, June 13-16, 2011.
- Mehmet Bayindir, Adem Yildirim, Mecit Yaman, Mert Vural, "Bio-inspired Optoelectronic Digital Nose for Breath Analysis", Nanotech'2011, Boston/USA, June 13-16, 2011.
- Mehmet Kanik, Mecit Yaman, Mehmet Bayindir, "Arrays of Ultralong, Ordered, Piezoelectric Nanotubes", MRS Fall Meeting, November 28 – December 02, 2011, Boston, USA.
- Mehmet Bayindir, Erol Ozgur, Ozan Aktas, Mehmet Kanik, Tural Khudiyev, Mecit Yaman, "Ultra-long Photoconductive Nanowire Arrays", MRS Fall Meeting, November 28 – December 02, 2011, Boston, USA.
- Erol Ozgur, Ozan Aktas, Mecit Yaman, Mehmet Bayindir, "Indefinitely Long Aligned Nanowires Assembled into Large Area Photodetection Device", MRS Fall Meeting, November 28 – December 02, 2011, Boston, USA.
- H. Deniz, F. Buyukserin, Mehmet Bayindir, "Fabrication of Silicon Nanocrystal Embedded Silica Nanorod Ordered Arrays Using Nanoimprint Lithography", 2011 MRS Spring Meeting and Exhibit, San Francisco, April 25 - 29, 2011.
- E. Ozgur, O. Aktas, M. Yaman, Mehmet Bayindir, "Emergent Semiconductor Properties in Selenium Nanowire Arrays Fabricated by Direct Size Reduction Technique", 2011 MRS Spring Meeting and Exhibit, San Francisco, April 25 - 29, 2011.
- T. Khudiyev, R. Ozalp, E. O. Ozgur, M. Yaman, Mehmet Bayindir, "In-fiber Chalcogenide Nanowire Arrays for Nonlinear Photonics Applications", 2011 MRS Spring Meeting and Exhibit, San Francisco, April 25 - 29, 2011.
- M. Kanik, M. Yaman, Mehmet Bayindir, "Kilometer-long, Ordered, Uniform Piezoelectric Nanotube Array", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- E. Ozgur, O. Aktas, M. Yaman, Mehmet Bayindir, "Uniform Photoconductive Nanowire Arrays Readily Assembled into Large Area Electronics", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- O. Aktas, E. Ozgur, M. Yaman, Mehmet Bayindir, "Electrically Induced Phase Change Memory Switching In Chalcogenide Nanowires", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.

- T. C. Cinkara, M. Kanik, M. Yaman, Mehmet Bayindir, "Nano-structured Near and Mid-infrared Fibers", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- T. Khudiyev, E. Ozgur, M. Yaman, Mehmet Bayindir, "Structural Coloring in Cylindrical Core-shell Nanowires", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- O. Aktas, E. Ozgur, M. Yaman, Mehmet Bayindir, "Electrically Induced Phase Change Memory Switching In Chalcogenide Nanowires", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- M. Yaman, H.E. Kondakci, Mehmet Bayindir, "Large and Dynamical Tuning of Chalcogenide Photonic Crystal by Temperature Modulation", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- H. Deniz, T. Khudiyev, F. Buyukserin, Mehmet Bayindir, "Fabrication of Hydrogen Silsesquioxane (HSQ) Ordered Nanorod Arrays for Sub Wavelength Antireflective Coatings", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- A. Yildirim, H. Budunoglu, H. Deniz, M.Ö. Guler, Mehmet Bayindir, "Fluorescent Organically Modified Silica Aerogel Thin Films for TNT Sensing", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- M. Yaman, H.E. Kondakci, A. Dana, Mehmet Bayindir, "Spatial Infrared Filter for Chemical and Biological Sensing", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- M. Yaman, A. Yildirim, M. Vural, Mehmet Bayindir, "Artificial Olfaction Using Nanostructured Hollow Core Fibers", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- O. Aktas, E. Ozgur, Mehmet Bayindir, "Label-free and Ultrasensitive Microcavity Biosensors with High Selectivity", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- H. Budunoglu, A. Yildirim, B. Daglar, Mehmet Bayindir, "Antireflective and Antifogging Organically Modified Silica Thin Films", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.



- A. Yildirim, H. Budunoglu, M. Yaman, M.Ö. Guler, Mehmet Bayindir, "Room Temperature Synthesis of Nanoporous Organically Modified Silica Thin Films on Flexible Substrates", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- B. Daglar, A. Yildirim, H. Budunoglu, H. Deniz, Mehmet Bayindir, "Fluorinated Mesoporous Silica Nanoparticles for Liquid Marble Formation and Superhydrophobic Surfaces", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- H. Duman, M. C. Kilinc, T. Khudiyev, H. Deniz, Mehmet Bayindir, "New Frequency Generation with Metallic Nanoantennas on As<sub>2</sub>Se<sub>3</sub>", NanoTR 7: Nanoscience and Nanotechnology Conference, Istanbul, June 27-July 1, 2011.
- Mehmet Kanik, Mecit Yaman, and Mehmet Bayindir, Indefinitely-long, Highly Ordered Uniform Piezoelectric Nanotubes and Nanorods, MRS Fall Meeting, 1-5 December 2010, Boston, USA.
- Adem Yildirim, Hülya Budunoglu, and Mehmet Bayindir, Room temperature synthesis of nanoporous organically modified silica thin films on flexible substrates for low cost devices, MRS Fall Meeting, 1-5 December 2010, Boston, USA.
- Mehmet Bayindir, Adem Yildirim, Mert Vural, Mecit Yaman, Nanostructured Composite Fibre Array as Optoelectronic Nose using Binary Logic, MRS Fall Meeting, 1-5 December 2010, Boston, USA.
- Hülya Budunoglu, Adem Yildirim, Mustafa O. Guler, and Mehmet Bayindi, Highly Transparent, Flexible and Superhydrophobic Organically Modified Silica Aerogel Thin Films, MRS Fall Meeting, 1-5 December 2010, Boston, USA.
- Adem Yildirim, Hülya Budunoglu, Hakan Deniz, Mustafa O. Guler, and Mehmet Bayindir, Fluorescent Organically Modified Silica Aerogel Thin Films for TNT Sensing, MRS Fall Meeting, 1-5 December 2010, Boston, USA.
- M. Bayindir and M. Yaman, *Top-to-bottom approach to produce extremely long semiconducting nano-ribbons and nano-wires*, MRS Fall Meeting, November 30- December 4, 2009, Boston, USA.
- M. Yaman, M. Vural, H. Esat Kondakci, and M. Bayindir, *In-Fiber Nanostructured Optical Devices*, MRS Fall Meeting, November 30- December 4, 2009, Boston, USA.
- S. T. Kasirga, Y. N. Ertas, and M. Bayindir, *Microfluidics (MF) for Tunable Electromagnetic Metamaterials*, MRS Fall Meeting, November 30- December 4, 2009, Boston, USA.

- H. Esat Kondakci, M. Yaman, O. Koylu, A. Dana, M. Bayindir, *All-chalcogenide glass omnidirectional photonic band gap variable infrared filters*, SPIE Optics and Photonics, 2-8 August 2009, San Francisco, USA.
- S. T. Kasirga, Yavuz N. Ertas and M. Bayindir, *Microfluidics for Reconfigurable Electromagnetic Metamaterials*, MediNano II, 26-27 October 2009, Athens, Greece.
- T. Hudiyev, R. Ozalp, D. Akbulut and M. Bayindir, *Supercontinuum Generation in Highly Nonlinear Chalcogenide Nanofibers*, MediNano II, 26-27 October 2009, Athens, Greece.
- M. Yaman and M. Bayindir, *Top-to-bottom approach: In-fiber nanophotonic structures*, MediNano II, 26-27 October 2009, Athens, Greece.
- H. Deniz, and M. Bayindir, *Silicon Nanocrystal Embedded Toroidal and Spherical Resonators*, MediNano II, 26-27 October 2009, Athens, Greece.
- H. Budunoglu, Adem Yildirim, H. Deniz, M. O. Guler, M. Bayindir, *Superhydrophobic to Superhydrophilic Conversion of Aerogels and Ambient-dried Aerogel Thin Films*, ECASIA'09, 18-23 October 2009, Antalya, Turkey.
- Adem Yildirim, H. Budunoglu, H. Deniz, M. O. Guler, M. Bayindir, *Fluorescent Silica Aerogel Thin Films for TNT Sensing*, ECASIA'09, 18-23 October 2009, Antalya, Turkey.
- D. Akbulut, A. Tulek, M. Bayindir, *Supercontinuum generation in toroidal chalcogenide microresonators*, MRS Fall Meeting, 1-5 December 2008, Boston, USA.
- O. Senlik, H. Guner, K. Gurel, B. Kaplan, M. Bayindir, A. Dana, *Optical discs for plasmonic applications: from plasmon resonance biosensors to doubly resonant infrared sensing*, MRS Fall Meeting, 1-5 December 2008, Boston, USA .
- O. Senlik, A. Dana, M. Bayindir, *Nanocalorimetry: Calorimetry of novel materials of ultra-small volumes using micro and nanoelectromechanical devices*, MRS Fall Meeting, 1-5 December 2008, Boston, USA.
- O. Senlik, H. Guner, K. Gurel, M. O. Oktel, A. Dana, M. Bayindir, *Measurement of photonic forces in coupled nanoplasmonic structures*, MRS Fall Meeting, 1-5 December 2008, Boston, USA.
- M. Bayindir, A. F. Abouraddy, O. Shapira, J. Viens, J. D. Joannopoulos, and Y. Fink, *A novel fabrication technique by composite material processing: Integrated metal-insulator-semiconductor fibers and fiber devices*, MRS Fall Meeting, 2005, Boston, USA.
- M. Bayindir and Yoel Fink, *Recent progress in meso-structured fibers and fiber devices*, SPIE Photonics West, San Jose, CA, 2005.

- M. Bayindir, A. F. Abouraddy, F. Sorin, J. Viens, J. D. Joannopoulos, and Y. Fink, Novel Optoelectronic Fibers Codrawn from Conducting, Semiconducting and Insulating Materials, CLEO Meeting, 2005, USA.
- M. Bayindir, A. F. Abouraddy, O. Shapira, J. D. Joannopoulos, and Y. Fink, *Thermal-Sensing Mesoscopic Fiber Devices by Composite Material Processing*, SPIE OpticsEast, 2005, Boston, USA.
- M. Bayindir, F. Sorin, A. F. Abouraddy, J. F. Viens, Y. Fink, *Microstructured fibers for light sensing*, SPIE OpticsEast, 2004, Boston, USA.
- Mehmet Bayindir, E. Cubukcu, I. Bulu, C. M. Soukoulis, and E. Ozbay, *Photonic band gap, defect characteristics, and waveguiding in two-dimensional disordered dielectric and metallic photonic crystals*, Electromagnetic Crystal Structures, 9-14 June 2001, UK.
- Mehmet Bayindir, S. Tanriseven, and E. Ozbay, *Coupled-microcavity structures in one-dimensional photonic band gap structures*, Electromagnetic Crystal Structures, 9-14 June 2001, UK.
- B. Temelkuran, Mehmet Bayindir, E. Ozbay, R. Biswas, M. M. Sigalas, G. Tuttle, and K. M. Ho, *Photonic crystal based resonant antenna with a very high directivity*, APS March Meeting, Minneapolis, March 2000.
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Tight-binding description of the coupled resonant cavity modes in three-dimensional photonic band gap structures*, APS March Meeting, Minneapolis, March 2000.
- Mehmet Bayindir, B. Temelkuran, and E. Ozbay, *Experimental demonstration of waveguides based around photonic crystals*, OSA/ILS'99 meeting, Santa Clara, October 1999.
- B. Temelkuran, Mehmet Bayindir, and E. Ozbay, *Highly direction antennas built around photonic crystals*, OSA/ILS 1999 meeting, Santa Clara.
- Z. Gedik and Mehmet Bayindir, *Disorder and localization in the lowest Landau level*, APS March Meeting, Atlanta, March 1999.
- Z. Gedik and Mehmet Bayindir, *Energy spectrum and localization in the lowest Landau level*, APS March Meeting, Los Angeles, March 1998.

## 12. RESEARCH INTERESTS

### **Fabrication techniques in nanotechnology**

- A new top-to-bottom fabrication method by thermal size reduction
- Ultralong nanostructures: Nanowires, nanotubes, core-shell nanowires
- Semiconducting, piezoelectric, and conducting nanostructures

- Polymeric micro and nanotubes

#### **Nanowire electronics and photonics**

- Nanowire-based optoelectronic sensors
- Nonlinear optics and photonics (New frequency generation in highly nonlinear glasses)
- Flexible electronic and photonics (Artificial skin, energy generators, capacitors)
- Structural coloration of nanostructures (Mie scattering)
- Nanowire photovoltaics

#### **Photonic band gap materials, photonic crystals**

- Coupled-cavity structures in photonic crystals
- Slow-wave in coupled-cavity waveguides
- Nonlinear optics in photonic crystal cavities

#### **Photonic band gap fibers**

- Hollow-core photonic band gap fibers for high-power IR laser beam delivery
- Photonic band gap fibers for infrared spectroscopy

#### **Micro- and nano-structured fibers**

- Fiber based optoelectronic and thermal devices
- Multimaterials fibers and fiber-based sensors

#### **Micro- and nano-photonics**

- Toroidal microcavities
- Plasmonic sensors, plasmonic resonant antennas
- Supercontinuum generation in chalcogenide nanofibers and waveguides
- Optoelectronic nose

#### **Infrared optics/fiber lasers**

- MCVD growth of active silica fiber preforms
- Active fibers for high-power fiber lasers
- Synthesis of chalcogenide glasses
- Infrared transmitting fibers
- IR resonators (microdisk, microtoroid)

#### **Functional nanostructured surfaces**

- Multifunctional (antireflective, self cleaning) coatings for photovoltaics
- Superhydrophobic, superhydrophilic ormosil coatings
- Low-refractive-index porous thin films
- Smart surfaces for chemical sensing

**GRANTS / AWARDS**

- *Project Title:* Piezoelectric polymer nanofibers for sensing, energy generation, and artificial skin  
*Funding Agency:* ERC- European Research Council, ERC Proof of Concept  
*Funding Amount:* 150,000 Euro  
*Position:* Principal Investigator  
*Period:* 2016-2018
  
- *Project Title:* Fabrication and characterization of dielectric encapsulated millions of ordered kilometer long nanowires and nanotubes and their applications  
*Funding Agency:* ERC- European Research Council  
*Funding Amount:* 2,003,000 USD  
*Position:* Principal Investigator  
*Period:* 2012-2017
  
- *Project Title:* High-power fiber lasers  
*Funding Agency:* Tubitak  
*Funding Amount:* 7,890,000 USD  
*Position:* Principal Investigator  
*Period:* 2012-2017
  
- *Project Title:* Digital photonic nose: Detection of toxic gases by using nanostructured photonic crystal fibers  
*Funding Agency:* TUBITAK (COST)  
*Funding Amount:* 178,500 USD  
*Period:* 2013-2015
  
- *Project Title:* Ultra-high quality factor microtoroid optical resonators for biological sensing with high sensitivity and specificity  
*Funding Agency:* The Turkish Scientific and Technical Research Council (TUBITAK)  
*Funding Amount:* 168,000 USD  
*Position:* Principal Investigator  
*Period:* 2012-2014
  
- *Project Title:* Multifunctional nanostructured coatings using organically modified silica colloids for photovoltaics and sensors  
*Funding Agency:* The Turkish Scientific and Technical Research Council (TUBITAK)  
*Funding Amount:* 178,500 USD  
*Position:* Principal Investigator  
*Period:* 2012-2014

- *Project Title:* Preparation of mechanically stable superhydrophobic and superhydrophilic coatings for ceramic and plastic surfaces  
*Funding Agency:* Bosch-Siemens B/S/H  
*Funding Amount:* 60,000 USD  
*Position:* Principal Investigator  
*Period:* 2013-2013
  
- *Project Title:* Nanotechnology Roadmap for New Generation Banknote  
*Funding Agency:* Central Bank of The Republic of Turkey  
*Funding Amount:* 81,000 USD  
*Position:* Principal Investigator  
*Period:* 2012-2013
  
- *Project Title:* Polymer encapsulated very long metal/semiconductor/polymer nanowire and nanotube arrays and their applications  
*Funding Agency:* The Turkish Scientific and Technical Research Council (TUBITAK)  
*Funding Amount:* 178,000 USD  
*Position:* Principal Investigator  
*Period:* 2011-2013
  
- *Project Title:* Infrared laser fibers for medical applications  
*Funding Agency:* The Turkish Scientific and Technical Research Council (TUBITAK)  
*Funding Amount:* 2,000,000 USD  
*Position:* Principal Investigator  
*Period:* 2007-2011
  
- *Project Title:* Wide-band infrared light generation in nanofibers  
*Funding Agency:* The Turkish Scientific and Technical Research Council (TUBITAK)  
*Funding Amount:* 157,000 USD  
*Position:* Principal Investigator  
*Period:* 2006-2009
  
- *Project Title:* TÜBA Gebip Award  
*Funding Agency:* Turkish Academy of Sciences (TUBA)  
*Funding Amount:* 30,000 USD + 3,500 USD for PhD students  
*Period:* 2007-2010
  
- *Project Title:* National Nanotechnology Research Center  
*Funding Agency:* State Planning Organization  
*Funding Amount:* 27,000,000 USD

*Position:* Deputy Director

*Period:* 2006-2011 (completed)

## EDUCATIONAL DEVELOPMENT ACTIVITIES

### **Computer based teaching for large classes:**

I teach Fundamentals of Physics, PHYS 101 and 102, to freshman students since 2006. Average number of students in each class is around 130. I use a tablet PC in order to write course notes and receive very good responses from students each semester. They like the method very much because of following reasons:

1. Students do not have to take notes during class, so they focus only on the concepts; later I post the course notes to the course website (see <http://bg.bilkent.edu.tr/mb.html>).
2. Students can easily see the notes on the screen due to large fonts.

### **Note-free teaching:**

I never use class notes in PHYS 101, 102, and 200 courses. I derive all formulas in class starting from the fundamental concepts. Students like this approach a lot. (Average student rating for +20 sections is above 4.5 out of 5.0).

## CONTRIBUTION TO BILKENT UNIVERSITY

- *Student supervising: Starting from 2000, I have supervised over 50 undergraduates and graduate students. Many of my students are very active in their fields in academia/industry in USA, Europe, or Turkey.*
- *Post-doctoral supervising: Post-docs who worked in my research group are actively working in academia, industry, and governmental institutions.*
- *Projects: Together with Prof. Salim Ciraci we completed first and second phases of national nanotechnology research center project supported by Turkish Government. From this project Bilkent University received 27 Million USD.*

- Establishing Turkey's first national nanotechnology research center: *Together with Prof. Salim Ciraci we established Turkey's first nanotechnology research center in Ankara. The center is opened to all researchers in academia and industry.*
- Starting the first interdisciplinary graduate program: *Together with Prof. Salim Ciraci we started a new interdisciplinary graduate programs in Material Science and Nanotechnology. The program is very successful; currently MSN has over 100 graduate students.*
- Committees Involved: *I involved several committees including PhD qualifications, MS/PhD applications, graduate catalogs, internet websites, purchasing equipment.*
- Internet website: *Together with web experts, we constructed a new internet website for UNAM (see [www.nano.org.tr](http://www.nano.org.tr)).*
- Development of computer-based teaching: *I teach Fundamentals of Physics, PHYS 101 and 102, to freshman students since 2006. Average number of student in each class is around 130. I use a tablet PC in order to write course notes. I receive very good responses from students each semester.*
- UNAM-iS: *We constructed a new information system in UNAM. Users all over the country, can reserve equipment, they can see their equipment usage, etc.*
- Bayindir group laboratories: *We have constructed 5 laboratories.*
- UNAM: *As the deputy director of UNAM, I was responsible for*
  - *Facility: We have over 800 users from academia and industry.*
  - *Equipment purchases: We have purchased over 150 equipment.*
  - *Clean room construction: 400 meter-square class 100 and 10000 cleanroom*
  - *Technicians supervision*
  - *Laboratory furnishing (62 Labs): 90% completed*

#### **CONTRIBUTION TO SOCIETY AT LARGE**

- *Establishing Turkey's first national nanotechnology user facility: UNAM-National Nanotechnology Research Center project was started in 2006; the project was completed at the end of year 2010. UNAM has over 800 users from academia, industry and governmental organizations. As the deputy*



director of the project since 2006 (of the center since 2008), I have contributed to every stages: planning of building, purchasing of equipment, installation of equipment, planning clean room, hiring of academic and technical personnel, development of UNAM-Information system and webpages, etc.

- *Nanotechnology seminars:* Over 30 seminars about nanoscience and nanotechnology were presented at universities, research centers, high schools, governmental departments, and companies.