

## BIOGRAPHY

### CV - SUMMARY

**Published journals (selected):**

Nature, Nature Materials (4), Physical Review Letters, Scientific Reports (4), Nano Letters (2), ACS Nano , ACS Sensor, Advanced Materials (3), Advanced Functional Materials, Analytical Chemistry (3), Applied Physics Letters (10)

**Number of articles:**

+100 articles in high-impact journals

**Patents:** 8 (3 licensed)**Awards:**

Alexander von Humboldt, Friedrich Wilhelm Bessel Research Award  
Turkish Academy of Sciences Young Scientist Award, The Turkish Scientific and Technological Research Council Award  
OSA New Focus Student Award

**Grants:**

ERC Consolidator Grant (1<sup>st</sup> in Turkey)  
ERC Proof of Concept  
11 TUBITAK and Industry Grants (18 M USD)

**Teaching evaluation:**

Student evaluation score: 4.4/5.0 (over 33 courses)

**Student supervision:** 28 PhD/MS thesis**Talks:** >100 (47 invited)**Citations:** ~7000, h-index: 45**Significant scientific contributions:**

A new nanofabrication scheme  
Piezoelectric polymer nanostructures and devices  
Digital photonic nose  
In-fiber multimaterial devices  
A new propagation mechanism for light

**Current research subjects:**

Single particle detection for DNA sequencing and sensing  
2D nanostructures

[www.mehmetbayindir.com](http://www.mehmetbayindir.com)



### PROFESSOR MEHMET BAYINDIR

I received my Ph.D. degree in physics from Bilkent University in 2002. During my Ph.D. years, I studied physics and applications of photonic band gap materials. Particularly, my work on coupled-cavity structures in photonic crystals has drawn considerable interest since early 2000s.

I worked as a postdoctoral researcher and became a research scientist at the Research Laboratory of Electronics / MIT in Professor Yoel Fink's research group. During this time, I have contributed to the development of a new fabrication technique that allows integration of active multimaterial in-fiber devices composed of metal, insulator and semiconducting domains for the first time. This breakthrough earned critical acclaim and recognition and resulted in 5

publications in Nature, Nature Materials, and Advanced Materials, and 3 issued directly related patents (all licensed). These researches constituted the fundamentals of a multimaterial fiber concept and are considered as a milestone in thermally drawn fiber technology due to their potential in advanced fiber devices and functional fabrics.

After returning to Turkey, I undertook (together with Prof. Salim Ciraci) the role of establishing state of the art nanotechnology center UNAM-National Nanotechnology Research Center (first national center in the country), and served as the deputy director of UNAM from 2006-2013, and later director until 2016. The synergy of around 400 advanced researchers and staff, made UNAM one of the top research centers in the region. The graduate programs initiated at UNAM attracted hundreds of graduate students from 13 countries.

My research group has been working on fiber-based micro- and nano-scale materials and their applications including a novel nanofabrication method by thermal size reduction, piezoelectric polymer nanowires, functional nanostructured surfaces (including open microfluidics), nano-scale photonics, fiber-based devices and sensors (including digital photonic nose), and active fibers for fiber lasers. I have been awarded 18M USD grants through international and national projects.

I am the author of over 100 articles published in high-impact journals, and more than 40 refereed conference papers. I also hold 4 US (3, licensed), 2 WO, 1EU, 2 Turkish patents. Furthermore, I am an editor of Nature Scientific Reports journal and reviewer of numerous prestigious scientific journals including Nature Materials, Nature Communications, Advanced Materials, Nano Letters, ACS Nano and Physical Review Letters. 28 students completed their MS or PhD thesis under my supervision, some of whom continued their academic careers in the top schools in the world, including MIT.

Furthermore, I have won the young scientist prize of the Scientific and Technological Research Council of Turkey (TUBITAK) in 2006 and The Young Scientist Award of Turkish Academy of Sciences (TUBA) in 2007. I have been the winner of the Optical Society of America's 2001 New Focus Award and 2005 MIT best poster awards. In 2012, I received the prestigious European Research Council-ERC consolidator grant (first ERC grant awarded to Turkey). I have been awarded an ERC Proof of Concept grant to support commercialization of piezo nanosystems developed in ERC-funded research for smart skin, cardiac sensors, and energy harvesting applications in 2016. I have been awarded to Friedrich Wilhelm Bessel Research Award given by The Alexander von Humboldt Foundation in 2020. I have been visiting professor at Center for Hybrid Nanostructures at University of Hamburg since February 2020.

# CURRICULUM VITAE

## Professor Mehmet BAYINDIR

### 1. PERSONAL DATA

- Birth date and place: 1975, Ermenek, Turkey
- Address: Room: R2.21, Luruper Chaussee 149, 22607 Hamburg, Germany
- E-mail: [mehmet.bayindir@physik.uni-hamburg.de](mailto:mehmet.bayindir@physik.uni-hamburg.de)
- Webpage: <http://www.mehmetbayindir.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
- M.S., Physics, Bilkent University 08/1997
- B.S., Physics, Bilkent University 06/1995

### 3. EMPLOYMENT HISTORY

- 02/20- : Visiting Professor, University of Hamburg, Germany
- 07/19- : President, 4U Nanotechnologies Inc., Ankara (not active)
- 03/18-04/19: General Coordinator, Eryigit Medical Inc., Ankara
- 03/14-10/16: Professor, Bilkent University, Department of Physics
- 02/13-12/15: Director, 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, Graduate Programs in Mat. 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 Mat. Science and Nanotech., 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

- Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt Foundation 2020
- European Research Council-ERC Proof of Concept Grant Award 2016
- European Research Council-ERC Starting Grant Award 2012
- The Young Scientist Award of Turkish Academy of Sciences (TUBA) 2007
- The Turkish Scientific and Technological Research Council (TUBITAK) Award 2006
- MIT Best Poster Award 2005
- Optical Society of America (OSA) New Focus Student Award 2001
- Top 30 in the university entrance exam over 1M candidates 1990

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

- Refereeing for journals including Nature Materials, Nature Communications, Advanced Materials, ACS Nano, Nano Letters, 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, IEEE 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
- Editorial Board Member, Scientific Reports, Nature Publishing Group 2012-Present

## 6. INVITED LECTURES AND INVITED TALKS

1. (Keynote speaker) *Multi-material fibers for smart textile: Current status, challenges, and future directions*, Aachen University, Germany, 2018
2. *Extremely-long Nanostructures for Photonics and Electronics*, Aarhus University, Denmark, 25 September 2017
3. *Micro and Nanostructured Fibers for Smart Surfaces, Triboelectric/Piezoelectric Energy Harvesting and Sensing*, MRS Spring Meeting, Phoenix, 16-22 April 2017
4. *Kilometers-Long Piezoelectric Polymer Nanoribbon Arrays for Sensing and Energy Generation*, MRS Spring Meeting, Phoenix, 16-22 April 2017
5. *Fiber-based micro and nano-devices for sensing and energy harvesting*, KAUST, Saudi Arabia, 29 March 2017
6. *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.
7. *Realization of a novel nanofabrication scheme: Producing kilometer-long nanostructures*, 17 June 2015, UNIDO Workshop, UNAM, Ankara.
8. *Reinvention of fiber drawing in the age of nanotechnology: A new top-to bottom nanofabrication scheme*, 16 April 2015, ITU Nanotechnology Research Center, Istanbul.
9. *Excellence in Science – ERC Enables Young Researchers*, ERC, TÜBİTAK, TÜBA, İstanbul, 29 August 2014.
10. *ERC-Grantees Conference 2014, Frontiers in Chemistry – The Basis for Advanced Materials*, Berlin, Germany, 28 August 2014.
11. *A new nanofabrication technique and its applications in photonics*, Photonics 2013, Aselsan, Ankara, 06 September 2013.
12. *A novel nanofabrication technique by thermal size reduction*, Turkish Physical Society Annual Meeting, Istanbul, 2013.
13. *A new top-to-bottom fabrication technique in nanotechnology: producing kilometer long insulating, piezoelectric, and semiconducting nanostructures*, KAUST, Jeddah, Saudi Arabia, 20 September 2013.
14. *Nanotechnology: A key to sustainable development*, Tubitak Bilgem, Gebze, 29 January 2013.
15. *A novel nanofabrication technique by thermal size reduction*, Tubitak MAM, Gebze, 13 September 2012.
16. *Nanostructured sensors: Large-area nanowire circuitry and digital optoelectronic nose*, UNIDO Workshop, Ankara, 25 Jun-08 Jul 2012.

17. *A New Top-To-Bottom Nanofabrication Technique*, Applications of Nanotechnology in Industry, Opportunity of Integration among IDB Member States, Egypt, 29–31 January 2012.
18. *Nanotechnology for a Sustainable Development*, Applications of Nanotechnology in Industry, Opportunity of Integration among IDB Member States, Egypt, 29–31 January 2012.
19. ( Keynote speaker ) *Nanotechnology: Engineering a better future*, 4th Wief-UITM Global Discourse on Nanotechnology, Kuala Lumpur, Malesia, October 14, 2011.
20. *A new fabrication technique in nanotechnology*, Nanotechnology Informatics and New Economic Paradigms, Applied Econometrics Association, Ankara, October 2010
21. *Nanotechnology revolution: Muslim world at a crossroad*, Al-Dhahran, Saudi Arabia, March 2010.
22. *Nanotechnology: A new technology revolution*, Erzurum Ataturk University, Erzurum, June 2010.
23. *Nanomaterials, nanofibers, nanodevices for sensing applications*, Ankara University, Ankara, April 2010.
24. *Nanotechnology in the World and Turkey*, TOBB-ETU University, Ankara, October 2010.
25. *Nanotechnology in defense*, ANSAF'10, Ankara, October 2010.
26. *Nanomaterials, nanofibers, and nanodevices*, Fatih University, Istanbul, June 2010.
27. *New trends in nanotechnology*, Turkish Physical Society, Bodrum, 2009.
28. *Nanomaterials, nanofibers and nanodevices for sensing applications*, Istanbul Technical University, Istanbul, 2009
29. *Investigation of nanophotonic structures*, National Spectroscopy Congress, Ankara, 2009.
30. *Nanomaterials, nanofibers and nanodevices for sensing applications*, Koc University, Istanbul, 2009
31. *Nanotechnology and photovoltaics*, Istanbul Chamber of Industry, Istanbul, 2008.
32. *Nanotechnology*, Istanbul Chamber of Commerce, Istanbul, 2008.
33. *Novel fibers and fiber-based devices*, Optics Summer School, Middle East Technical University, Ankara, 2008.
34. *Nanophotonics*, Nanoscience and Nanotechnology Conference III, Ankara, 2007.
35. *A new fabrication technique in nanotechnology*, Istanbul Technical University, Istanbul, 2007.
36. *Nanotechnology tools for defense applications*, Nanoscience and Nanotechnology Conference III, Ankara, 2007.
37. *A new fabrication technique: Kilometer-long nanostructures*, Nanoscience and Nanotechnology Conference II, Ankara, 2006.
38. *Nanotechnology and wearable intellegent fiber sensors*, Hacettepe University, Ankara, 2006.
39. *Multifunctional fiber-based sensors: Future smart fabrics*, Department of Defense, Ankara, 2006.
40. *Nanotechnology and wearable intellegent fiber sensors*, Ankara University, Ankara, 2006.
41. *Wearable intellegent fiber sensors*, Middle East Technical University, Ankara, 2006.
42. *Recent progress in meso-structured fibers and fiber devices*, SPIE Photonics West, San Jose, CA, 2005.
43. *Multi-functional fabrics and fabric systems for medical and military applications*, Bilkent University, Ankara, 2005.
44. *Thermal-sensing mesoscopic fiber devices by composite material processing*, SPIE Optics East, Boston, MA, 2005.
45. *A novel fabrication technique by composite material processing: Multi-functional fabrics and fabric systems for medical and military applications*, Koc University, Istanbul, 2005.
46. *Novel optoelectronic fibers and fiber devices: From raw materials to functional devices*, SPIE Optics East, Philadelphia, 2004.
47. *Coupled-cavity structures in photonic crystals*, MRS Meeting, San Francisco, CA, 2002.

## 7. 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

## 8. GRADUATE STUDENT SUPERVISION

### Supervised PhD Students:

|    | Name              | Current Institution                | Year Graduated     | Thesis Title                                                                                                                        |
|----|-------------------|------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Pınar Beyazkılıç  | University of California San Diego | 2018               | Nanomaterials for chemical/biomedical sensing and functional surface applications                                                   |
| 2  | Pelin Tören       | Joanneum Research/ Austria         | 2016               | Biological sensing applications of ultra high quality factor microtoroidal optical resonators with high sensitivity and selectivity |
| 3  | Mehmet Kanık      | MIT                                | 2015               | Nanostructured materials and devices for sensing and energy harvesting applications                                                 |
| 4  | Adem Yıldırım     | University of Colorado Boulder     | 2014               | Nanostructured materials for biological imaging and chemical sensing                                                                |
| 5  | Erol Özgür        | Arizona State University           | 2014               | Design and development of novel large scale applications in micro/nanophotonics and nanobiotechnology                               |
| 6  | Ozan Aktaş        | ORC Southampton / UK               | 2014               | Chalcogenide micro and nanostructures and applications                                                                              |
| 7  | Tural Khudiyev    | MIT                                | 2013               | Fabrication of core-shell nanostructures for photonics applications                                                                 |
| 8  | Hülya Budunoğlu   | Aselsan / Turkey                   | 2012               | Organically modified silica based nanomaterials for functional surfaces                                                             |
| 9  | Ersin Hüseyinoğlu | Bilkent University                 | continuing student | Utilization of whispering gallery mode chalcogenide resonators for nonlinear and lasing applications                                |
| 10 | Bihter Dağlar     | Bilkent University                 | deceased           | AAO membranes for nanoscale templates, ordered arrays and surfaces                                                                  |

**Supervised MS Students:**

|    | <b>Name</b>            | <b>Current Institution</b>                    | <b>Year Graduated</b> | <b>Thesis Title</b>                                                                                                                |
|----|------------------------|-----------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Ahmet Faruk Yavuz      | TUBITAK Space Technologies Research Institute | 2017                  | Large-area triboelectric nanogenerators                                                                                            |
| 2  | Mehmet Girayhan Say    | Linköping University                          | 2016                  | Nanowire and nanoribbons for flexible and bio-inspired electronics applications                                                    |
| 3  | Abubakar Isa Adamu     | Technical University of Denmark               | 2016                  | Binary coded identification of industrial chemical vapors with optofluidic nose                                                    |
| 4  | Abba Usman Saleh       | Tampere University                            | 2016                  | Development of multicore and tapered chalcogenide fibers for supercontinuum generation                                             |
| 5  | Muhammad Yunusa        | Max Planck                                    | 2015                  | Three-dimensional control of liquid spreading and transport with textured polymer fibers                                           |
| 6  | Bekir Türedi           | KAUST                                         | 2015                  | Nonlinear optics in nanostructures fiber bundles                                                                                   |
| 7  | Urandelger Tuvshindorj | University of Bonn                            | 2015                  | Organically modified silica nanostructures based functional coatings for practical applications                                    |
| 8  | E. Fahri Öztürk        | University of Bonn                            | 2014                  | Artificial olfaction with hollow core bragg fiber arrays                                                                           |
| 9  | Tamer Doğan            | University of Twente                          | 2014                  | Bio-inspired all-polymer photonic crystal fibers                                                                                   |
| 10 | Pınar Beyazkılıç       | University of California San Diego            | 2013                  | Formation of pyrene excimers in mesoporous organically modified silica thin films for visual detection of nitroaromatic explosives |
| 11 | Muhammet Halit Dolaş   | METU                                          | 2013                  | Light scattering from core-shell nano-structures: Structural coloration                                                            |
| 12 | Muhammet Çelebi        | Tubitak Space Technologies Research Institute | 2013                  | Silicon nanocrystal doped polymer nanowire arrays                                                                                  |
| 13 | Hüseyin Duman          | Roketsan                                      | 2013                  | Design and fabrication of resonant nanoantennas on chalcogenide glasses for nonlinear photonic applications                        |
| 14 | Özlem Köylü            | University of Delaware                        | 2011                  | Polymer/glass hollow-core photonic band gap fibers for infrared laser beam delivery                                                |
| 15 | Murat C. Kılınç        | Aselsan                                       | 2010                  | Resonant plasmonics nanoantennas                                                                                                   |
| 16 | Adem Yildirim          | University of Colorado Boulder                | 2009                  | Aerogel thin films for TNT sensing                                                                                                 |
| 17 | Kemal Gürel            | Garanti Bankası                               | 2009                  | Coupled surface plasmon structures and applications                                                                                |
| 18 | Y. Nuri Ertaş          | UCLA                                          | 2009                  | Microfluidics for plasmonic sensors and electromagnetic applications                                                               |
| 19 | Mert Vural             | University of Maryland, College Park          | 2009                  | Hollow core photonic bandgap fibers for medical applications                                                                       |
| 20 | Duygu Akbulut          | University of Twente                          | 2009                  | Lasing action and supercontinuum generation in nano- and micro-structures                                                          |

|    |              |                    |      |                                                                                    |
|----|--------------|--------------------|------|------------------------------------------------------------------------------------|
| 21 | Özlem Şenlik | Duke University    | 2008 | Micro- and nano-structured devices for thermal analysis and plasmonic applications |
| 22 | Ozan Aktaş   | ORC<br>Southampton | 2008 | Multi-frequency fluxgate magnetic force microscopy                                 |

## 9. PATENTS

1. Household appliance component comprising a base element with a functional coating, Maria Carmen Artal Lahoz, Mehmet Bayindir, Miguel Angel Bunuel Magdalena, Cristina CASTRO LAPETRA, Bihter DAGLAR, Tugba DISPINAR, Elena Martinez Solanas, Javier SANZ NAVAL, Adem YILDIRIM, Murat Yücel, Dilara ÖKSÜZ, EP3324813B1, 2019.
2. Piezoelectricity PVDF materials and method for making the same, Mehmet Bayindir, Mehmet Kanik, US Patent App. 14/828,524, 2017.
3. Cellulose Based Sensor for Detection of Nitroaromatic Explosives, Turkey, Patent Application No. 2015/04051, April, 2015, Gokcen Birlik Demirel and Bihter Daglar (Patent Pending)
4. Thermal-sensing fiber devices with semiconducting element, Mehmet Bayindir, Fabien Sorin, Ayman Abouraddy, Ofer Shapira, Jerimy R. Arnold, Yoel Fink, John D. Joannopoulos, PCT, WO2007038718A1, 2007.
5. Optoelectronic fiber photodetector, Mehmet Bayindir, Fabien Sorin, Ayman F. Abouraddy, Dursen S. Hinczewski, Ofer Shapira, Jerimy Arnold, Jean F. Viens, Yoel Fink, John Joannopoulos, PCT, WO2006014360A2, 2006.
6. 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 )
7. 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 )
8. 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 )
9. Piezoelectric fibers, Mehmet Bayindir, A. F. Abouraddy, J. D. Joannopoulos, and Y. Fink (pending, filed 2005).
10. 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).

## 10. SCHOLARLY PUBLICATIONS

### Ph.D. Dissertation

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

### Published Books

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

### Reviews

1. 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).

2. 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).
3. 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)

1. M. Kanik, M. G. Say, M. Urel, H. S. Sen, E. Durgun, and Mehmet Bayindir, Piezoelectric nanoribbon based electronic skin, artificial hand and electro cardiac devices, in preparation, (2021).
2. M. Bayindir and E. E. Bayindir, Synergic viral-bacterial co-infection in catalase-deficient COVID-19 patients causes suppressed innate immunity and lung damages due to detrimental elevation of hydrogen peroxide concentration, SSRN Preprint, DOI: 10.2139/ssrn.3648292 (2020).
3. P. Beyazkilic, A. Saateh, Mehmet Bayindir, C. Elbuken, Evaporation-induced biomolecule detection on versatile superhydrophilic patterned surfaces: Glucose and DNA assay, ACS Omega, volume 3, page 13503 (2018).
4. P. Toren, E. Ozgur, and Mehmet Bayindir, Label-free optical biodetection of pathogen virulence factors in complex media using microtoroids with multifunctional surface functionality, ACS Sensors, volume 3, page 352 (2018).
5. B. Daglar, G. B. Demirel, and Mehmet Bayindir, Fluorescent paper strips for highly sensitive and selective detection of nitroaromatic analytes in water samples, ChemistrySelect, volume 2, page 7735 (2017).
6. O. Aktas and Mehmet Bayindir, Tapered nanoscale chalcogenide fibers directly drawn from bulk glasses as optical couplers for high index resonators, Applied Optics, volume 56, page 385 (2017).
7. M. Yunusa, F. E. Ozturk, A. Yildirim, U. Tuvshindorj, M. Kanik, and Mehmet Bayindir, Bio-inspired hierarchically structured polymer fibers for anisotropic non-wetting surfaces, RSC Advances, 7, 15553 (2017).
8. M. Kanik, M. Marcali, M. Yunusa, C. Elbuken, and Mehmet Bayindir, Continuous triboelectric power harvesting and biochemical sensing inside poly(vinylidene fluoride) hollow fibers using microfluidic droplet generation, Advanced Materials Technologies, volume 1, page 1600190 (2016).
9. A. I. Adamu, F. E. Ozturk, and Mehmet Bayindir, Binary coded identification of industrial chemical vapors with an optofluidic nose, Applied Optics, volume 55, page 10247 (2016).
10. 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).
11. P. Beyazkilic, U. Tuvshindorj, A. Yildirim, C. 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).
12. A. Yildirim, M. Turkaydin, 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).
13. M. Kanik, M. G. Say, B. Daglar, A. F. Yavuz, M. Dolas, M. El-Ashry, and Mehmet Bayindir, A motion and sound activated, 3d printed, chalcogenide based triboelectric nanogenerator, Advanced Materials, volume 27, page 2367 (2015). ( Back cover story )
14. E. Ozgur, P. Toren, O. Aktas, E. Huseyinoglu, and Mehmet Bayindir, Label-free biosensing with high selectivity in complex media using microtoroidal optical resonators, Scientific Reports, volume 5, 13173 (2015).

15. 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).
16. T. Khudiyev and Mehmet Bayindir, Nanospring harvest light more efficiently, Applied Optics, volume 54, page 8018 (2015).
17. P. Toren, E. Ozgur, and Mehmet Bayindir, Real-time and selective detection of single nucleotide DNA mutations using surface engineered microtoroids, Analytical Chemistry, volume 87, 10920 (2015).
18. 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).
19. 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).
20. T. Khudiyev and Mehmet Bayindir, Superenhancers: Novel opportunities for nanowire optoelectronics, Scientific Reports, volume 4, page 7505 (2014).
21. 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).
22. 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).
23. 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).
24. 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).
25. 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).
26. 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).
27. 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).
28. 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).
29. 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).
30. 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).
31. 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).

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

1. E. Ozgur, O. Aktas, Mehmet Bayindir, *Manually Assembled Macroscopic Nanowire Image Sensor*, *Optics & Photonic News*, Optics in 2012, December issue, page 36 (2012).
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## 11. RESEARCH INTERESTS

### **Multimaterial Fiber-based Devices and Sensors**

- Multifunctional fiber probes for optogenetics and neural networks
- In-fiber novel devices and sensors
- Specialty fibers

### **A new top-to-bottom fabrication techniques in nanotechnology**

- Nanofabrication by iterative thermal size reduction
- Ultra-long nanostructures: Nanowires, nanotubes, core-shell nanowires, nanoribbons
- Semiconducting, piezoelectric, and conducting nanostructures
- Polymeric micro and nanotubes

### **Nanowire electronics, photonics, and mechanics**

- Nanowire-based optoelectronic sensors
- Nonlinear optics and photonics (New frequency generation in highly nonlinear glasses)
- Large-area flexible electronics and photonics (Artificial skin, energy generators, nanocapacitors)
- Structural coloration of nanostructures (Mie scattering), Nanowire photovoltaics

### **Active fibers and fiber lasers**

- MCVD growth of active silica fiber preforms
- Active fibers for high-power fiber lasers

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

- Coupled-cavity structures in photonic crystals
- Hollow-core photonic band gap fibers for high-power IR laser beam delivery and QCLs
- Photonic band gap fibers for infrared spectroscopy

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

- Fiber based optoelectronic and thermal devices (smart textile)
- Multimaterials fibers and fiber-based sensors (including neuroscience application)
- Hierarchically surface textured fibers (on-fiber microfluidics)

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

- Toroidal microcavities
- Plasmonic sensors, plasmonic resonant antennas
- Metamaterials
- Supercontinuum generation in chalcogenide nanofibers and waveguides
- Optoelectronic nose (digital photonic nose)

### **Functional nanostructured surfaces**

- Multifunctional (antireflective, self-cleaning) coatings for photovoltaics
- Superhydrophobic, superhydrophilic ormosil coatings
- Smart surfaces for chemical sensing

### 13. 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: 2016-2016

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: 1,500,000 Euro

Position: Principal investigator

Period: 2012-2016

Project Title: High-power fiber lasers (*Classified*)

Funding Agency: The Scientific and Technological Research Council of Turkey (TUBITAK)

Funding Amount: 7,890,000 USD

Position: Principal investigator

Period: 2012-2016

Project Title: Optical sensors (*Classified*)

Funding Agency: The Scientific and Technological Research Council of Turkey (TUBITAK)

Funding Amount: 5,830,000 USD

Position: Principal investigator

Period: 2012-2014

Project Title: Digital photonic nose: Detection of toxic gases by using nanostructured photonic crystal fibers

Funding Agency: The Scientific and Technological Research Council of Turkey (TUBITAK) (COST)

Funding Amount: 178,500 USD

Position: Principal investigator

Period: 2013-2015

Project Title: Ultra-high quality factor microtoroid optical resonators for biological sensing with high sensitivity and specificity

Funding Agency: The Scientific and Technological Research Council of Turkey (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 Scientific and Technological Research Council of Turkey (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 Scientific and Technological Research Council of Turkey (TUBITAK)

Funding Amount: 178,000 USD

Position: Principal investigator

Period: 2011-2013

Project Title: Infrared laser fibers for medical applications

Funding Agency: The Scientific and Technological Research Council of Turkey (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 Scientific and Technological Research Council of Turkey (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

Position: Principal investigator

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