

Belkıs Gökbulut

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EDUCATION

PhD, Boğaziçi University, Physics Department, Istanbul, Turkey, 2020.
Thesis Title: "Light–matter interaction in photonic cavities".
Supervisor: Prof. Mehmet Naci İnci

MSc, Boğaziçi University, Physics Department, Istanbul, Turkey, 2015.
Thesis Title: "An interferometric vibration sensor based on a four-core optical fiber".
Supervisor: Prof. Mehmet Naci İnci

BSc, Yeditepe University, Physics Department, Istanbul, Turkey, 2012.

RESEARCH INTERESTS

Quantum optics, light–matter interaction in high and low-Q hybrid quantum systems, cavity quantum electrodynamics, nanophotonics, nanoplasmonics, nanomaterials, optomechanics, Anderson localization of electromagnetic waves, time-resolved fluorescence lifetime imaging and spectroscopy of nanosystems, random lasers, photonic crystals.

WORK EXPERIENCE

Associate Professor, Boğaziçi University, Department of Physics, 2024–.

Assistant Professor, Boğaziçi University, Department of Physics, 2024.

Assistant Professor, Boğaziçi University, Institute for Data Science and Artificial Intelligence, 2022–2024.

Postdoctoral Research Fellow, Boğaziçi University, Physics Department, 2020–2022.

Research Associate, Boğaziçi University, Physics Department, 2015–2020.

TEACHING EXPERIENCE

Fall 2024, Boğaziçi University, Department of Physics: Physics I

Spring 2023, Boğaziçi University, Institute for Data Science and Artificial Intelligence: Mathematics for Data Science and Artificial Intelligence.

Fall 2023, Boğaziçi University, Institute for Data Science and Artificial Intelligence: Statistical Inference.

Fall 2022, Boğaziçi University, Department of Physics: Introduction to Quantum Optics.

PROJECTS

“Investigations of vacuum fluctuations of Perovskite nanocrystals in random plasmonic media”, **Principal Investigator**, BAP, 2024–.

“Fabrication of a high-quality nano-laser capable of operating at room temperature with a low optical pump power using a hybrid quantum structure consisting of a photonic crystal cavity, a gold nano-particle and perovskite quantum dots”, **Principal Investigator**, TÜBİTAK 1001, 2021–2024.

“Fabrication and characterization of a hybrid photonic-plasmonic resonator for enhancing light–matter interaction”, **Researcher**, BAP, 2020–2022.

“Investigation of the physical mechanism of Fe₃O₄ - PEG - BODIPY nanostructures and their interaction with metal ions by picosecond time-correlated single photon counting method”, **Researcher**, BAP, 2018–2020.

“Simultaneous measurement of temperature and vibration using a four-core fiber optic sensor”, **Researcher**, BAP, 2015–2018.

AWARDS

Boğaziçi University Doctoral Thesis Award, 2020.

Yeditepe University Undergraduate Full Scholarship, Honors Degree, 2012.

PROFESSIONAL MEMBERSHIPS / ORGANIZATIONS

Optical Society of America, OSA

SPIE

INTERNATIONAL JOURNAL ARTICLES

1. B. Gökbulut, “Strong localization and suppression of Anderson modes in an asymmetrical optical waveguide”, *Optics Express* 2023, 31(8), 13211.

2. B. Gökbulut, “A hybrid photonic-plasmonic resonator based on a partially encapsulated 1D photonic crystal waveguide and a plasmonic nanoparticle”, *Heliyon* 2022, 8(12), E12346.

3. B. Gökbulut, “Strongly Confined Electromagnetic Waves in a Hybrid Photonic–Plasmonic Resonator for Enhancing Light–Matter Interaction”, *International Journal of Advances in Engineering and Pure Sciences* 2023, 35(1), 81.

4. B. Gökbulut, A. Inanc, G. Topcu, S. Ozcelik, M. M. Demir, M. N. Inci, “Hybrid photonic-plasmonic mode coupling induced enhancement of the spontaneous emission rate of CdS/CdSe quantum emitters”, *Physica E: Low-dimensional Systems and Nanostructures* 2022, 136, 115017.

5. **B. Gökbulut**, A. Inanc, G. Topcu, S. Ozcelik, M. M. Demir, M. N. Inci, “Enhanced light–matter interaction in a hybrid photonic–plasmonic cavity”, *Applied Physics A* 2021, 127, 907.
6. **B. Gökbulut**, G. Topcu, M. M. Demir, M. N. Inci, “Plasmon-induced spectral tunability of Perovskite nanowires”, *Optical Materials* 2021, 122, 111702.
7. **B. Gökbulut**, M. N. Inci, “Investigation of spontaneous emission dynamics of dye molecules coupled into transverse Anderson localized cavities in a hyperbolic waveguide”, *Photonics and Nanostructures - Fundamentals and Applications* 2020, 39, 100769.
8. **B. Gökbulut**, A. Inanc, G. Topcu, S. S. Unluturk, S. Ozcelik, M. M. Demir, M. N. Inci, “Enhanced spontaneous emission rate in a low-Q hybrid photonic-plasmonic nanoresonator”, *Journal of Physical Chemistry C* 2019, 123(32), 19862.
9. **B. Gökbulut**, M. N. Inci, “Enhancement of the spontaneous emission rate of Rhodamine 6G molecules coupled into transverse Anderson localized modes in a wedge-type optical waveguide”, *Optics Express* 2019, 27(11), 15996.
10. **B. Gökbulut**, A. Inanc, G. Topcu, T. Guner, M. M. Demir, M. N. Inci, “Enhancement of the spontaneous emission rate of perovskite nanowires coupled into cylindrical hollow nanocavities formed on the surface of polystyrene microfibers”, *Journal of Physical Chemistry C* 2019, 123(14) 9343.
11. **B. Gökbulut**, M. N. Inci, “Inhibition of spontaneous emission in a leaky mode wedge nanocavity”, *Photonics and Nanostructures - Fundamentals and Applications* 2018, 32, 68.
12. **B. Gökbulut**, E. Yartasi, E. Sunar, O. I. K. Altan, T. N. Gevrek, A. Sanyal, M. N. Inci, “Humidity induced inhibition and enhancement of spontaneous emission of dye molecules in a single PEG nanofiber”, *Optical Materials Express* 2018, 8(3), 568.
13. **B. Gökbulut**, S. Guvenc, M. N. Inci, “Investigation of a novel temperature sensing mechanism based on strain induced optical path-length difference in a multicore optical fiber”, *Turkish Journal of Physics* 2017, 41, 410.
14. B. Bilen, **B. Gökbulut**, U. Kafa, E. Heves, M. N. Inci, B. Unlu, “Scanning acoustic microscopy and time-resolved fluorescence spectroscopy for characterization of atherosclerotic plaques”, *Scientific Reports* 2018, 8, 14378.
15. S. Guvenc, **B. Gökbulut**, H. Yuksel, G. Kosoglu, M. N. Inci, “Four-core optical fiber as a Calorimetric Gauge”, *Applied Optics* 2016, 55(32), 9173.

INTERNATIONAL CONFERENCES

1. **B. Gökbulut**, “Plasmonic Nanoclusters: Fast Dynamics Surface-Enhanced Fluorescence”, ICOP2024, Centro Didattico Morgagni, Florance, Italy, (17 June 2024).
2. **B. Gökbulut**, “Transverse Anderson localization of light waves through Au nanoparticles in a 3D optical waveguide”, Proc. SPIE 12653, Nanoengineering: Fabrication, Properties, Optics, Thin Films, and Devices XX, 1265309, (20 August 2023).

3. **B. Gökbulut**, M. N. Inci, “Statistical measurements of the density of photon states in randomly formed Au nanoparticle clusters”, Proc. SPIE 12648, Plasmonics: Design, Materials, Fabrication, Characterization, and Applications XXI, 1264804, (20 August 2023).
4. **B. Gökbulut**, “Hybrid photonic-plasmonic microcavity for enhancing light-matter interaction”, Proc. SPIE 12570, Quantum Optics and Photon Counting, 125700D, (24 April 2023).
5. **B. Gökbulut**, “Ultrafast Dynamics Surface Enhanced Fluorescence through Plasmonic Nanoclusters”, 2022 MRS Fall Meeting & Exhibit, (5 December 2022).
6. **B. Gökbulut**, “Strong Light–Matter Interaction in Hybrid Photonic–Plasmonic Resonator”, Photon 2022, East Midlands Conference Centre, Nottingham, UK, (30 August 2022).
7. **B. Gökbulut**, “Enhanced spontaneous emission of fluorescent molecules coupled into quasi-optical modes in random media”, Quantum Optics & Quantum Information Meeting 2021 (22-23 April 2021), (<https://kobit.org.tr/program-2021.pdf>).
8. **B. Gökbulut**, M. N. Inci, “Enhanced spontaneous emission in Anderson localized cavities”, Proc. SPIE 11345, Nanophotonics VIII, 1134523, (1 April 2020).
9. **B. Gökbulut**, M. N. Inci, “Light-matter interaction in an optically asymmetric wedge type nanocavity”, Quantum Information and Measurement (QIM) V: Quantum Technologies, OSA Technical Digest, paper F5A.52, (4-6 April 2019).
10. **B. Gökbulut**, M. N. Inci, “Controlling spontaneous emission rate of dye molecules confined in a single nanofiber via humidity”, Photon 2018, Aston University, Birmingham, UK (3-6 September 2018), (https://cdn.eventsforce.net/files/ef-q5vmtsq56tk6/website/958/photon_2018_-_abstract_book_final.pdf).
11. **B. Gökbulut**, M. N. Inci, “Observation of the humidity induced oscillatory behavior of the Purcell factor in a single PEG nanofiber”, Latin America Optics and Photonics Conference, OSA Technical Digest, paper W4A.4, (December 2018).
12. **B. Gökbulut**, M. N. Inci, “Strain-based multicore fiber optic temperature sensor”, Proc. SPIE 10231, Optical Sensors 2017, 102312R (May 16, 2017).
13. **B. Gökbulut**, S. Güvenç, M. N. Inci, “Detection of strain induced temperature variations based on a four-core optical fiber”, Conference on Lasers and Electro-Optics, OSA Technical Digest, paper JW2A.2, (14-19 May 2017).
14. **B. Gökbulut**, M. N. Inci, “An interferometric vibration sensor based on a four-core optical fiber”, Proc. SPIE 9899, Optical Sensing and Detection IV, 989920 (April 29, 2016).

REFERENCES

Available upon request.