

PERSONAL INFORMATION

FULL NAME: ILARIA BARGIGIA

NATIONALITY: ITALIAN

EMAIL: ilaria.bargigia@polimi.it

WORK EXPERIENCE

Assistant Professor - Ricercatore a Tempo Determinato B (April 2023- Present)

*Dipartimento di Fisica, Politecnico di Milano,
Piazza Leonardo da Vinci, 32 Milano 20133.*

Researcher (February 2022 – April 2023)

*Center for Nano Science and Technology,
IIT@Polimi, Via Pascoli 70/3, Milano 20133.*

Assistant Professor (January 2020 – December 2021)

*Department of Physics,
Wake Forest University, 1834 Wake Forest Road, Winston-Salem 27109, NC (USA).*

Post-Doctoral Researcher (July 2017 – December 2019)

*School of Chemistry and Biochemistry,
Georgia Institute of Technology, 901 Atlantic Drive, Atlanta 30318, GA (USA).*

Post-Doctoral Researcher (January 2014 – June 2017)

*Center for Nano Science and Technology,
IIT@Polimi, Via Pascoli 70/3, Milano 20133.*

Post-Doctoral Researcher (January 2013- December 2013)

*Dipartimento di Fisica, Politecnico di Milano,
Piazza Leonardo da Vinci, 32 Milano 20133.*

TEACHING EXPERIENCE

As Professor (Wake Forest University, 2020 – December 2021)

- *General Physics I – PHY113 – Undergraduate level*
- *Physical Optics and Optical Design – PHY352/652– Graduate and Undergraduate level*

As Teaching Assistant (Politecnico di Milano, 2010 – 2016; Sept 2022 - Present)

- Course “Experimental Physics A”
- Course “Physics II”
- Course “Fundamentals of Experimental Physics” and “Integration of Fundamentals of Experimental Physics”

EDUCATION

PhD in Physics (2010 –2013)

- *Politecnico di Milano, Italy.*
- *Thesis: Advanced Techniques for Optical Spectroscopy of Diffusive Media*
- *Supervisor: Prof Antonio Pifferi*
- *Passed with Merit*

MSc in Physical Engineering (2007-2009)

- *Politecnico di Milano, Italy*
- *Thesis: Time-Resolved Near-Infrared Spectroscopy of Bi-Layered Diffusive Media*
- *Grade: 104/110*

BSc in Physical Engineering (2004-2007)

- *Politecnico di Milano, Italy*
- *Thesis: Near-infrared spectroscopy for the non-invasive monitoring of cognitive functions*
- *Grade: 96/110*

High School Diploma (1999-2004)

- *Liceo Classico Statale C. Beccaria, Milano, Italy*
- *High School specialization: classical studies*
- *Grade: 100/100*

TECHNICAL SKILLS

EXPERIMENTAL TECHNIQUES

- *Transient Absorption Spectroscopy and Microscopy*
- *2-Dimensional Coherent Spectroscopy*
- *Time-Resolved Photoluminescence Spectroscopy and Microscopy*
- *Time-Resolved Diffuse Optical Spectroscopy*
- *Gas in Scattering Media Absorption Spectroscopy*

INSTRUMENTS (HANDLING EXPERIENCE)

- *Light Conversion Pharos Laser (1030nm, 100KHz and 600KHz)*
- *Light Conversion NOPA Orpheus*

- Coherent Chameleon Laser Oscillator (tunable, 80 MHz)
- Home built non-collinear OPOs
- Streak camera systems (Hamamatsu)
- Time-Correlated Single-Photon Counting Electronics (Becker and Hickel, Edinburgh Instruments, PicoQuant)
- Supercontinuum fiber lasers (Fianium, NKT; ps pulses, repetition rate up to 80MHz)
- Acousto-Optic tunable filters (Fianium, NKT)
- Spectrometers (Princeton Instruments, Jobin-Yvon, Ocean Optics)
- CCD Detectors, Photomultipliers (Hamamatsu)
- Hybrid Detectors (Becker and Hickel)
- Single-Photon Avalanche Diodes both in Si and InGaAs/InP (MPD)

COMPUTER SKILLS

- Languages: C, Python
- Analytical Software Packages: MATLAB, Origin
- Instrument handling: LABVIEW
- Others: LaTeX, MS Office

FOREIGN LANGUAGES

English

- Level: Excellent
- First Certificate in English Examination (FCE), level B2, grade B (passing grade C)

French

- Level: scholastic

BIBLIOMETRIC DATA

- H-index: 18 (Google Scholar)
- Citations: 1334
- Author ID: EGI-3TwAAAAJ&hl (Google Scholar)
- Last updated: 3rd July 2023

SELECTED 5 PUBLICATIONS

5. **I. Bargigia**, E. Gutierrez-Meza, D. Valverde-Chavez, S. R. Marques, A. R. Srimath Kandada, *Identifying incoherent mixing effects in the coherent two-dimensional photocurrent excitation spectra of semiconductor*, J. Chem. Phys., In Press, doi: 10.1063/5.0121635, 2022.

4. **I. Bargigia**, L. R. Savagian, A. M. Österholm, J. R. Reynolds, and C. Silva, *Charge-Transfer Intermediates in the Electrochemical Doping Mechanism of Conjugated Polymers*, J. Am. Chem. Soc. 143, pp.294-308, doi: 10.1021/jacs.0c10692, 2021.

3. **I. Bargigia**, E. Zucchetti, A. R. Srimath Kandada, M. Moreira, C. Bossio, W. P. D. Wong, P. Barbeitas Miranda, P. Decuzzi, C. Soci, C. D'Andrea, and G. Lanzani, *The Photophysics of Polythiophene Nanoparticles for Biological Applications*, Chem Bio Chem 19, pp. 1-6, doi: 10.1002/cbic.201800167, 2018.
2. G. Pace, **I. Bargigia**, Y.-Y. Noh, C. Silva, and M. Caironi, *Intrinsically distinct hole and electron transport in conjugated polymers controlled by intra and intermolecular interactions*, Nature Communications 10, pp. 1-11, doi: 10.1038/s41467-019-13155-9, 2019.
1. M. Bressan, L. Dall'Osto, **I. Bargigia**, M. J. P. Alcocer, D. Viola, G. Cerullo, C. D'Andrea, R. Bassi and M. Ballottari, *LHCII can substitute for LHCI as an antenna for photosystem I but with reduced light-harvesting capacity*, Nature Plants 2, pp. 1-10, doi: 10.1038/NPLANTS.2016.131, 2016.

PUBLICATIONS

PEER-REVIEWED JOURNALS

31. **I. Bargigia**, E. Gutierrez-Meza, D. Valverde-Chavez, S. R. Marques, A. R. Srimath Kandada, *Identifying incoherent mixing effects in the coherent two-dimensional photocurrent excitation spectra of semiconductor*, J. Chem. Phys., In Press, doi: 10.1063/5.0121635, 2022.
30. E. Gutiérrez-Meza, R. Malatesta, H. Li, **I. Bargigia**, A. R. Srimath Kandada, D. A. Valverde-Chávez, S.-M. Kim, H. Li, N. Stingelin, S. Tretiak, E. R. Bittner, C. Silva-Acuña, *Frenkel biexcitons in hybrid HJ photophysical aggregates*, Science Advances 7, doi: 10.1126/sciadv.abi5197, 2021.
29. **I. Bargigia**, L. R. Savagian, A. M. Österholm, J. R. Reynolds, and C. Silva, *Charge-Transfer Intermediates in the Electrochemical Doping Mechanism of Conjugated Polymers*, J. Am. Chem. Soc. 143, pp.294-308, doi: 10.1021/jacs.0c10692, 2021.
28. A. Levitsky, G. M. Matrone, A. Khirbat, **I. Bargigia**, X. Chu, O. Nahor, T. Segal-Peretz, A. J. Moulé, L. J. Richter, C. Silva, N. Stingelin, and G. L. Frey, *Toward Fast Screening of Organic Solar Cell Blends*, Adv. Sci. 7, 2000960, doi: 10.1002/advs.202000960, 2020
27. A. R. Srimath Kandada, **I. Bargigia**, E. R. Bittner, and C. Silva, *Quantum process tomography of entangled photons as a probe of intermediates of singlet fission in a tetracene derivative*, arXiv:1909.12869, 2019.
26. A. Cherubin, L. Destefanis, M. Bovi, F. Perozeni, **I. Bargigia**, G. de la Cruz Valbuena, C. D'Andrea, A. Romeo, M. Ballottari, and Massimiliano Perduca, *Encapsulation of Photosystem I in Organic Microparticles Increases Its Photochemical Activity and Stability for Ex Vivo Photocatalysis*, ACS Sustainable Chem. Eng. 7, pp. 10435-10444, doi: 10.1021/acssuschemeng.9b00738, 2019.
25. F. Thouin, D. A. Valverde Chávez, C. Quarti, D. Cortecchia, **I. Bargigia**, D. Beljonne, A. Petrozza, C. Silva, and A. R. Srimath Kandada, *Phonon coherences reveal the polaronic character of excitons in two-dimensional lead-halide perovskites*, Nature Materials 18, pp. 349-356, doi: 10.1038/s41563-018-0262-7, 2019.
24. G. Pace, **I. Bargigia**, Y.-Y. Noh, C. Silva, and M. Caironi, *Intrinsically distinct hole and electron transport in conjugated polymers controlled by intra and intermolecular interactions*, Nature Communications 10, pp. 1-11, doi: 10.1038/s41467-019-13155-9, 2019.

23. F. Thouin, A. R. Srimath Kandada, D. A. Valverde-Chavez, D. Cortecchia, **I. Bargigia**, A. Petrozza, X. Yang, E. R. Bittner, and C. Silva, *Electron–Phonon Couplings Inherent in Polarons Drive Exciton Dynamics in Two-Dimensional Metal-Halide Perovskites*, Chem. Mater. 31, pp. 7085-7091, doi: 10.1021/acs.chemmater.9b02267, 2019.
22. Z. Yuan, C. Buckley, S. Thomas, G. Zhang, **I. Bargigia**, G. Wang, B. Fu, C. Silva, J.-L. Bredas, and E. Reichmanis, *A Thiazole–Naphthalene Diimide Based n-Channel Donor–Acceptor Conjugated Polymer*, Macromolecules 51, pp. 7320-7328, doi: 10.1021/acs.macromol.8b01829, 2018.
21. **I. Bargigia**, E. Zucchetti, A. R. Srimath Kandada, M. Moreira, C. Bossio, W. P. D. Wong, P. Barbeitas Miranda, P. Decuzzi, C. Soci, C. D’Andrea, and G. Lanzani, *The Photophysics of Polythiophene Nanoparticles for Biological Applications*, Chem Bio Chem 19, pp. 1-6, doi: 10.1002/cbic.201800167, 2018.
20. G. Grancini, D. Viola, M. Gandini, D. Altamura, E. A. A. Pogna, V. D’Innocenzo, **I. Bargigia**, C. Giannini, G. Cerullo and A. Petrozza, *Lattice distortions drive electron-hole correlation within micrometer-size lead-iodide perovskite crystals*, ACS Energy Lett. 2, pp. 265-269, doi: 10.1021/acsenergylett.6b00607, 2017.
19. E. Zucchetti, M. Zangoli, **I. Bargigia**, C. Bossio, F. Di Maria, G. Barbarella, C. D’Andrea, G. Lanzani and M. Antognazza, *Poly(3-hexylthiophene) nanoparticles for biophotonics: study of the mutual interaction with living cells*, J. Mater. Chem. B 5, pp. 565-574, doi: 10.1039/c6tb02047j, 2017.
18. A. Pinnola, M. Ballottari, **I. Bargigia**, M. J. P. Alcocer, C. D’Andrea, G. Cerullo, and R. Bassi, *Functional modulation of LHCSR1 protein from Physcomitrella patens by zeaxanthin binding and low pH*, Scientific Reports 7, pp. 11158, doi: 10.1038/s41598-017-11101-7, 2017.
17. F. Mascia, L. Girolomoni, M. J. P. Alcocer, **I. Bargigia**, F. Perozeni, S. Cazzaniga, G. Cerullo, C. D’Andrea, and M. Ballottari, *Functional analysis of photosynthetic pigment binding complexes in the green alga Haematococcus pluvialis reveals distribution of astaxanthin in Photosystems*, Scientific Reports 7, pp. 16319, doi: 10.1038/s41598-017-16641-6, 2017.
16. S. K. Venkata Sekar, **I. Bargigia**, A. Dalla Mora, P. Taroni, A. Ruggeri, A. Tosi, A. Pifferi, A. Farina, *Diffuse optical characterization of collagen absorption from 500 to 1700 nm*, J. Biomedical Optics 22, 015006, doi: 10.1117/1.JBO.22.1.015006, 2017.
15. M. Bressan, L. Dall’Osto, **I. Bargigia**, M. J. P. Alcocer, D. Viola, G. Cerullo, C. D’Andrea, R. Bassi and M. Ballottari, *LHCII can substitute for LHCI as an antenna for photosystem I but with reduced light-harvesting capacity*, Nature Plants 2, pp. 1-10, doi: 10.1038/NPLANTS.2016.131, 2016.
14. E-R. Janecek, Z. Walsh-Korb, **I. Bargigia**, A. Farina, M. H. Ramage, C. D’Andrea, A. Nevin, A. Pifferi and O. Scherman, *Time-resolved laser spectroscopy for the in situ characterization of methacrylate monomer flow within spruce*, Wood Sci. Technol., pp. 1-16, doi: 10.1007/s00226-016-0882-5, 2016.
13. E. Sakat, **I. Bargigia**, M. Celebrano, A. Cattoni, S. Collin., D. Brida, M. Finazzi, C. D’Andrea and P. Biagioni, *Time-resolved photoluminescence in gold nanoantennas*, ACS Photonics 3, pp. 1489-1493, doi: 10.1021/acsphotonics.6b00039, 2016.

12. H. Yu, H. Li, P. Zhang, A. Famulari, F. Guo, **I. Bargigia** and J. Martí-Rujas, *Exploiting polymorphism in second sphere coordination: thermal transformation, NLO properties and selective mechanochemical synthesis*, Cryst. Eng. Comm. 18, pp. 2408-2412, doi: DOI: 10.1039/c6ce00366d, 2016.
11. M. Cametti, **I. Bargigia** and J. Martí-Rujas, *Dynamic single crystal to polycrystal transformation of a 1D-coordination polymer and its second harmonic generation*, Dalton Transactions 45, pp. 1674-1678, doi: 10.1039/c5dt04283f, 2016.
10. S.K. V. Sekar, A. Dalla Mora, **I. Bargigia**, E. Martinenghi, C. Lindner, P. Farzam, M. Pagliazzi, T. Durduran, P. Taroni, A. Pifferi and A. Farina, *Broadband (600-1350 nm) time resolved diffuse optical spectrometer for clinical use*, IEEE Journal of Selected Topics in Quantum Electronics 22, doi: 10.1109/JSTQE.2015.2506613, 2016.
9. J.A. Guggenheim, **I. Bargigia**, A. Farina, A. Pifferi and H. Dehghani, *Time resolved diffuse optical spectroscopy with geometrically accurate models for bulk parameter recovery*, Biomed. Optics Express 7, pp. 3784-3794, doi: 10.1364/BOE.7.003784, 2016.
8. S. Dal Conte, F. Bottegoni, E. A. A. Pogna, D. De Fazio, S. Ambrogio, **I. Bargigia**, C. D'Andrea, A. Lombardo, M. Bruna, F. Ciccacci, A. C. Ferrari, G. Cerullo and M. Finazzi, *Ultrafast valley relaxation dynamics in monolayer MoS2 probed by nonequilibrium optical techniques*, Phys. Rev. B 92, pp. 235425-1-6, doi: 10.1103/PhysRevB.92.235425, 2015.
7. A. Farina, A. Torricelli, **I. Bargigia**, L. Spinelli, R. Cubeddu, F. Foschum, M. Jäger, E. Simon, O. Fugger, A. Kienle, F. Martelli, P. Di Ninni, G. Zaccanti, D. Milej, P. Sawosz, M. Kacprzak, A. Liebert and A. Pifferi, *In-vivo multilaboratory investigation of the optical properties of the human head*, Biomedical Optics Express 6, pp. 2609-2623, doi: 10.1364/BOE.6.002609, 2015.
6. H. Wabnitz, D. R. Taubert, M. Mazurenka, O. Steinkellner, A. Jelzow, R. Macdonald, D. Milej, P. Sawosz, M. Kacprzak, A. Liebert, R. Cooper, J. Hebden, A. Pifferi, A. Farina, **I. Bargigia**, D. Contini, M. Caffini, L. Zucchelli, L. Spinelli, R. Cubeddu and A. Torricelli, *Performance assessment of time-domain optical brain imagers, part 1: basic instrumental performance protocol*, J. Biomed. Opt. 19, pp. 086010-1-12, doi: 10.1117/1.JBO.19.8.086010, 2014.
5. A. Farina, **I. Bargigia**, E.-R. Janecek, Z. Walsh, C. D'Andrea, A. Nevin, M. Ramage, O. A. Scherman and A. Pifferi, *Nondestructive optical detection of monomer uptake in wood polymer composites*, Opt. Letters 39, pp. 228-231, doi: 10.1364/OL.39.000228, 2014.
4. **I. Bargigia**, A. Nevin, A. Farina, A. Pifferi, C. D'Andrea, M. Karlsson, P. Lundin, G. Somesfalean and S. Svanberg, *Diffuse optical techniques applied to wood characterization*, J. Near Infrared Spectrosc. 21, pp. 259-268, doi: 10.1255/jnirs.1068, 2013.
3. G. Quarto, A. Pifferi, **I. Bargigia**, A. Farina, R. Cubeddu and P. Taroni, *Recipes to make organic phantoms for diffusive optical spectroscopy*, Appl. Optics 52, pp. 2494-2502, doi: 10.1364/AO.52.002494, 2013.
2. A. Farina, **I. Bargigia**, P. Taroni and A. Pifferi, *Note: comparison between a prism-based and an acousto-optic tunable filter-based spectrometer for diffusive media*, Rev. Sci. Instrum. 84, pp. 0161091-3, doi: 10.1063/1.4789312, 2013.

1. **I. Bargigia**, A. Tosi, A. Bahgat Shehata, A. Della Frera, A. Farina, A. Bassi, P. Taroni, A. Dalla Mora, F. Zappa, R. Cubeddu and A. Pifferi, *Time-resolved diffuse optical spectroscopy up to 1700 nm by means of a time-gated InGaAs/InP Single-Photon Avalanche Diode*, *Applied Spectroscopy* 66, pp. 944-950, doi: 10.1366/11-06461, 2012.

GRANTS

INTERNAL GRANTS

1. August 2019 (before officially joining Wake Forest University) – Research Grant from Center for Functional Materials (CFM), Wake Forest University – PI capacity
2. August 2019 (before officially joining Wake Forest University) – Research Grant from Center for Functional Materials (CFM), Wake Forest University – co-PI capacity

CONFERENCE PRESENTATIONS

ORALS

1. *Influence of Side Chain Composition and Polarity of the Environment on the Electrochemical Doping Mechanism in Poly[3-(6-hydroxy)hexylthiophene] and Dioxythiophene Derivatives*, 108^o Congresso Nazionale SIF, 12-16 Sept 2022, Milan (Italy).
2. *Influence of Side Chain Composition and Polarity of the Environment on the Electrochemical Doping Mechanism in Poly[3-(6-hydroxy)hexylthiophene] and Dioxythiophene Derivatives*, 2022 MRS Spring Meeting and Exhibit, 8-13 May and May 23-25 2022, Hawaii, USA, **INVITED**.
3. *Excited States Dynamics in Conjugated Polymers as a Function of Oxidative States for Biological Applications*, The 70th Southeastern Regional Meeting of American Chemical Society (SERMACS 2018), Oct 31- Nov 3 2018, Augusta (GA), USA.
4. *Excited State Dynamics of Conjugated Polymer Nanoparticles used for Biological Applications*, Optical Probes 2017, Quebec City (Canada).
5. *Conjugated Polymer Nanoparticles for Biotechnological Applications: a Photophysical Study*, International Conference on Optical, Optoelectronic and Photonic Materials and Applications ICOOPMA 2016, 12-17 June 2016, Montreal (Canada).
6. *Time-Resolved Photoluminescence Spectroscopy for the Investigation of State Transitions in Photosynthesis*, 16th European Conference on the Spectroscopy of Biological Molecules (ECSBM16), 6-10 September 2015, Bochum (Germany).
7. *Time-Resolved Diffuse Optical Spectroscopy beyond 1100 nm as a Tool for the Characterization of Biological Tissues*, Frontiers in Nano Science, Technology and Applications (FINSTA'14), 20-22 December 2014, Sri Sathya Sai Institute of Higher Learning, Prashantinilayam, AP, India.
8. *In-vivo Optical Spectroscopy in the Time-Domain Beyond 1100 nm*, European Conference on Biomedical Optics, 12-16 May 2013, Munich (Germany), **INVITED**.
9. *Optical Spectroscopy in the time-domain beyond 1.1 μm : a tool for the characterization of diffusive media*, CLEO/EUROPE-IQEC 2013, 12-16 May 2013, Munich (Germany).

10. *Time- and wavelength resolved diffuse optical spectroscopy for non-invasive characterization of wood*, Shipwrecks 2011, 18-21 October 2011, Stockholm (Sweden).
11. *Time-domain diffuse optical spectroscopy and Gas in Scattering Media Absorption Spectroscopy for wood characterization*, XCVII Congresso Nazionale della Società Italiana di Fisica, 26 – 30 September 2011, L'Aquila (Italy).
12. *InGaAs/InP Single-Photon Avalanche Diode operated in gated mode for time-resolved diffuse optical spectroscopy up to 1700 nm*, XCVII Congresso Nazionale della Società Italiana di Fisica, 26 – 30 September 2011, L'Aquila (Italy).

ORGANIZED CONFERENCES

1. *2021 MRS Fall Meeting and Exhibit, EQ12 - Optical Probes of Nanostructured, Organic and Hybrid Materials (Hybrid event)*, Nov 29 – Dec 8, 2021, Boston (MA), USA.

WORKSHOPS

1. *Oral Presentation - Organic Electronics for Biological Applications*, Workshop title: Hierarchical Assembly and Function of Organic and Hybrid Materials, 19-23 June 2021, Telluride (CO), USA.
2. *Oral Presentation - Excited States Dynamics in Conjugated Polymers as a Function of Oxidative States for Biological Applications*, Workshop title: Exciton/Photon Interactions for Quantum Systems, 10-14th June 2019, Telluride (CO), USA.

NATIONAL JOURNALS

As an award to the communication classified as third in the section of “Matter Physics” of the XCVII National Congress of the Italian Physics Society (SIF):

- [1]. **I. Bargigia**, *InGaAs/InP single-photon avalanche diode operated in gated mode for time-resolved diffuse optical spectroscopy up to 1700 nm*, Il Nuovo Cimento C 35, 2012.

AWARDS

Second place for the poster:

I. Bargigia, A. Tosi, A. Farina, A. Bassi, P. Taroni, A. Bahgat Shehata, A. Della Frera, A. Dalla Mora, F. Zappa, R. Cubeddu and A. Pifferi, “*Optical Spectroscopy up to 1700 nm: a Time-Resolved Approach Combined with an InGaAs/InP Single-Photon Avalanche Diode*”, Biomedical Optics and 3D Imaging OSA 2012, Miami, Florida (USA) (28 April-2 May 2012). Proc. OSA JM3A.16, Biomed/DH joint poster session.

WORK AS REFEREE

Referee for Science Advances and Chemistry of Materials.