

Curriculum vitae

Personal information

Name: Dr.-Ing. Gordon Zyla
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Date of Birth: 23/04/1988
Place of Birth: Gelsenkirchen, Germany
Nationality: German
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Education

Since 01/01/2025 **Vilnius University (VU)**
Laser Research Center (LRC)
Postdoctoral fellow
Currently : VU Foundation's 2024 Young Scientist Co-funding

01/06/2022 – 30/11/2024 **Foundation for Research & Technology Hellas (FORTH)**
Institute of Electronic Structure and Laser (IESL)
Postdoctoral fellow
Currently : Marie-Curie Postdoctoral Fellow (European Union)
Formerly : Feodor Lynen Fellow (Alexander von Humboldt Foundation)

01/04/2024 – 30/06/2024 **Consiglio Nazionale delle Ricerche**
Institute for Photonics and Nanotechnologies (IFN)
Postdoctoral fellow – Secondment in the Marie-Curie Postdoctoral Fellowship project (European Union)

01/01/2022 – 31/05/2022 **Ruhr University Bochum**
Chair of Applied Laser Technologies
Postdoc

01/04/2021 – 31/12/2021 **Foundation for Research & Technology Hellas (FORTH)**
Institute of Electronic Structure and Laser (IESL)
Nonlinear Lithography group,
Postdoctoral fellow
Gateway Fellow (Ruhr University Bochum)

01/10/2014 – 31/03/2021 **Ruhr University Bochum**
Chair of Applied Laser Technologies
Research assistant and Ph. D student
Dissertation topic:
Strukturfarben mittels Zwei-Photonen Polymerisation/
Generation of structural colors using two-photon polymerization
PhD award date: 05.03.2020

01/02/2018 – 31/03/2018 **University of Nebraska-Lincoln**
Laser Assisted Nano Engineering Lab
Doctoral student
PR.INT (Ruhr University Bochum)

04/04/2013 – 30/09/2014 **Ruhr-University Bochum**
Master of Science in Mechanical Engineering

15/10/2008 – 03/04/2013 **Ruhr-University Bochum**
Bachelor of Science in Mechanical Engineering

09/08/1998 – 01/06/2007 **Schalken Gymnasium**
German higher education entrance qualification

Grants

01/2025 **VU Foundation's 2024 Young Scientist Co-funding Competition**
VU Foundation
Funding period: 12 months

12/2022 **Marie-Curie Postdoctoral Fellowship**
Marie Skłodowska-Curie Actions as part of the European Union's
Horizon Europe research and innovation programme (GA: 101059253)
Funding period: 24 months

06/2022 **Feodor-Lynen Fellowship**
Alexander von Humboldt Foundation
Funding period: 24 months

ERA Fellowship (Rejected due to successful Feodor-Lynen application)
Fostering balanced brain circulation within Marie Skłodowska-Curie
Actions as part of the European Union's Horizon Europe research and
innovation programme
Funding period: 24 months

04/2021 **Gateway Fellowship**
Ruhr University Bochum within the framework of
RUB Research School funding programme

02/2018 **Project International – PR.INT**
Ruhr University Bochum within the framework of
RUB Research School funding programme

Awards and nominations

EuroPhotonics scholarship

Zyla, G.*(06/2024): Seminar and workshop on ‘High-Precision Laser-based 3D Printing of Micro-Optical Elements’ at Vilnius University, Lithuania.

Best paper award in relation to my presentation at Photonics West 2024:

Zyla, G.*(2024): Laser-based 3D printing of novel optical devices. SPIE Photonics West, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XVII, San Francisco, United States.

Best oral talk award:

Zyla, G.*, Kovalev, A., Esen, C., Gorb, S., Ostendorf, A. (2020): Fabrication of bioinspired structural colors by Two-Photon Polymerization. 21th International Symposium on Laser Precision Microfabrication. Session: 3D micro/nano processing II. The symposium was virtually held due to Corona.

Best student paper award in relation to my presentation at Photonics West 2018:

Zyla, G.*, Kovalev, A., Gurevich, E. L., Esen, C., Ostendorf, A., Gorb, S. (2018): Printing structural colors via direct laser writing. Proc. SPIE 10544, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XI, 105440W.

Contributions at international conferences (* - presenter)

Zyla, G.*, Tsilipakos, O., Zografopoulos, D., Papamakarios, S., Farsari, M. (upcoming event 07/2024): Laser-based 3D printing of structures to control electromagnetic radiation: Bridging 2D, 2.5D, and 3D. META 2024, Toyama, Japan (**Invited**).

Zyla, G.* (2024): Laser-based 3D printing of novel optical devices. SPIE Photonics West, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XVII, San Francisco, United States (**Invited**).

Zyla, G.*, Barchesi, E., Mavrikos, S., Giorgio, I., dell’Isola, F., Grigoropoulos, C., Farsari, M. (2024): 3D pantographic metamaterials at an extremely small length scale. SPIE Photonics West, 3D pantographic metamaterials at an extremely small length scale, San Francisco, United States.

Zyla, G.* (2023): Metamaterials and optical microelements printed by two-photon polymerization. International Workshop on Laser Material Processing and Applications, Hida Takayama, Japan (**Invited**).

Zyla, G.*, Papamakarios, S., Tsilipakos, O., Zografopoulos, D., Kafesaki, M., Farsari, M., Soukoulis, C. (2023): Ultra-thin metasurfaces fabricated by two-photon polymerization. CLEO Europe, Munich, Germany.

Zyla, G.*, Maconi, G., Ladika, D., Melissinaki, V., Barmparis, G., D., Nolvi, A., Kassamakov, I., Farsari, M. (2023): Generation of photonic nanojets using 3D microstructures printed by two-photon polymerization, SPIE Photonics West, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XVII, San Francisco, United States.

Zyla, G.* (2023): 3D printing at the micro- and nanoscale: a power approach for engineering future applications, SPIE Photonics West, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XVII, San Francisco, United States, 2023 (**Invited**).

Activities in the research system

Teaching activities
2015 – 2019

2017 – 2019:

Lectures 'Two-photon polymerization' and 'Holographic optical tweezer for medical applications.'

2015 – 2019:

Supervision of 'Laboratory Work'

Reviewer activities
Since 2020

Reviewer in:

'Optics Express,' 'Optics Letters,' 'Optical Materials Express,' 'Nanophotonics,' and 'International Journal of Extreme Manufacturing,' 'Light: Advanced Manufacturing.'

Other activities
Since 2018

2024/2025:

Program committee in 'Nanoscale and Quantum Materials: From Synthesis and Laser Processing to Applications,' SPIE Photonics West. (https://spie.org/PWL/conferencedetails/nanoscale-quantum-materials#=_)

2023:

Chair track of 'Light-Assisted Microfabrication' at the Photonics Online Meetup. (<http://photonicsonlinemeetup.org>)

Guest-editor, special issue on 'Extreme Manufacturing' in 'Light: Advanced Manufacturing.' (https://www.light-am.com/news/index_tabliod_en/201ef0b9-fb9a-49ab-a6be-485e0fdd84f3_en.htm)

2020:

Assistance with the preparation of a research proposal (German Federal Ministry for Education and Research – VIP+):

Miniaturisiertes Diodenlaserbasiertes Zwei-Photonen-Polymerisationssystem zur Herstellung nutzerdefinierter Mikrooptiken/Miniaturized diode laser-based two-photon polymerization system for fabrication of custom-designed microoptics
Result :granted

<https://www.validierungsfoerderung.de/validierungsprojekte/mini2pp>

2018 – 2021:

Representative of the 'Engineering Sciences' in RUB RS Executive Board. (RUB RS: Ruhr University Bochum Research School).

Language skills

German	Native language
English	C2
Spanish	B1
Greek	A1/A2

List of publications (* - corresponding author)

Monographs and book chapters:

1. **Zyla, G*** (2020). Bionische Strukturfarben mittels Zwei-Photonen Polymerisation. Doctoral Thesis, Ruhr-Universität Bochum, doi.org/10.13154/294-7212.
2. Ostendorf, A.*, Köhler, J., Ksouri, S. I., **Zyla, G.**, Esen, C. (2017): Laser-based assembler and microfluidic applications. Laser-based assembler and microfluidic applications. In: Jesper Glückstad, Darwin Palima (eds.), *Light Robotics – Structure-mediated Nanobiophotonics*, Elsevier, Amsterdam, pp. 33–64.

Publications with peer review process:

1. Papamakarios, S.*, Tsilipakos, O., Katsantonis, I., Koulouklidis, A. D., Manousidaki, M., **Zyla, G.**, Daskalaki, C., Tzortzakis, S., Kafesaki, M.*, and Farsari, M.* (2024): Cactus-like metamaterial structures for electromagnetically induced transparency at THz frequencies. *ACS Photonics*
2. Barchiesi, E., Mavrikos, S., Giorgio, I., Grigoropoulos, C., Farsari, M., dell’Isola, F., **Zyla, G.*** (2024): Complex mechanical properties of 3D micro-metric pantographic metamaterials fabricated by two-photon polymerization. *Continuum Mech. Thermodyn.*, 36, 1755-1766.
3. Stavrou, M.*, **Zyla, G.**, Ladika, D., Dumur, F., Farsari, M., Gray, D.* (2024): Push-pull carbazole-based dyes: synthesis, strong ultrafast nonlinear optical response, and effective photoinitiation for multiphoton lithography. *ACS Appl. Opt. Mater.*, 2, 1653-1666.
4. **Zyla, G.***, and Farsari, M. (2024): Frontiers of Laser-Based 3D Printing: A Perspective on Multi-Photon Lithography. *Laser Photonics Rev.*, 2301312.
5. **Zyla, G.***, Maconi G., Nolvi, A., Marx, J., Ladika, D., Salmi, A., Melissinaki, V., Kassamakov, I., Farsari, M. (2024): 3D micro-devices for enhancing the lateral resolution in optical microscopy. *Light: Adv. Manuf.*, 5, 19.
6. **Zyla, G.***, Kovalev, A., Esen, C., Ostendorf, A., Gorb, S. (2022): Two-photon polymerization as a potential manufacturing tool for biomimetic engineering of complex structures found in nature. *J. Opt. Microsyst.*, 2, 031203.
7. **Zyla, G.***, Kovalev, A., Gurevich, E. L., Esen, C., Liu, Y., Lu, Y., Gorb, S., Ostendorf, A. (2020): Structural colors with angle-insensitive optical properties generated by *Morpho*-inspired 2PP structures. *Appl. Phys. A* **126**, 740.
8. **Zyla, G.***, Surkamp, N., Gurevich, E. L., Esen, C., Klehr, A., Knigge, A., Hofmann, M. R., Ostendorf, A. (2020): Two-photon polymerization with diode lasers emitting ultrashort pulses with high repetition rate. *Opt. Lett.* **45**, pp. 4827-4830, 2020.
9. Surkamp, N.*, **Zyla, G.**, Gurevich, E. L., Esen, C., Klehr, A., Knigge, A., Gurevich, E. L., Ostendorf, A., Hofmann, M. R. (2020): Mode-locked diode lasers as sources for two-photon polymerization. *Proc. SPIE 11349, 3D Printed Optics and Additive Photonic Manufacturing II*, 113490G.

10. Surkamp, N.*, **Zyla, G.**, Gurevich, E. L., Klehr, A., Knigge A., Ostendorf, A., Hofmann, M. R. (2020): Mode-locked diode laser-based two-photon polymerisation. *Electron. Lett.* **56**, 2020.
11. **Zyla, G.***, Kovalev, A., Heisterkamp, S., Esen, C., Gurevich, E. L., Gorb, S., Ostendorf, A. (2019): Biomimetic structural coloration with tunable degree of angle-independence generated by two-photon polymerization. *Opt. Mater. Express* **9**, pp. 2630–2639.
12. **Zyla, G.***, Kovalev, A., Gurevich, E. L., Esen, C., Ostendorf, A., Gorb, S. (2018): Printing structural colors via direct laser writing. *Proc. SPIE 10544, Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XI*, 105440W.
13. **Zyla, G.***, Kovalev, A., Grafen, M., Gurevich, E. L., Esen, C., Ostendorf, A., Gorb, S. (2017): Generation of bioinspired structural colors via two-photon polymerization. *Sci. Rep.* **7**, 17622.
14. Staudinger, U.*, **Zyla, G.**, Krause, B., Janke, A., Fischer, D., Esen, C., Voit, B., Ostendorf, A. (2017): Development of electrically conductive microstructures based on polymer/CNT nanocomposites via two-photon polymerization. *Microelectron. Eng.* **179**, 48–55, 2017.
15. Köhler, J.* , Kutlu, Y., **Zyla, G.**, Ksouri, S. I., Esen, C., Gurevich, E. L., Ostendorf, A. (2017) Optical assembly of microsnap-fits fabricated by two-photon polymerization. *Optical Engineering*, 56(10):105105, 2017.
16. Köhler, J.* , **Zyla, G.**, Ksouri, S. I., Esen, C., Ostendorf, A. (2016): Optical screw-wrench for interlocking 2PP-microstructures. *Proc. SPIE 9764, Complex Light and Optical Forces X*, 97641E, 2016.
17. Ksouri, S. I*., Mattern, M., Köhler, J., Aumann, A., **Zyla, G.**, Ostendorf, A. (2014): Holographic Optical Tweezers: Microassembly of shape-complementary 2PP building blocks. *Proc. SPIE 9164, Optical Trapping and Optical Micromanipulation XI*, 916433, 2014.

Publications without peer review process :

1. **Zyla, G.***, Solak, M., Gurevich, E. L., Esen, C., Ostendorf, A. (2016): Direct fabrication of microstructures with holographic Two-Photon-Lithography. *Proceeding of the 17th International Symposium on Laser Precision Microfabrication*, 1–5.
2. **Zyla, G.***, Ksouri, S. I., Köhler, J., Esen, C., Ostendorf, A. (2016): Building with light–fabrication and assembly of micro structures. *Laser & Photonics*, AT-Fachverlag GmbH, 2016.
3. **Zyla, G.***, Ksouri, S. I., Köhler, J., Esen, C., Ostendorf, A. (2015): Bauen mit Licht - Herstellung und Montage von Mikrostrukturen. *Photonik 6.2015*, AT-Fachverlag GmbH, 2015.

Patents

1. DE 10 2020 115 869 A1, Herstellung eines Objekts mittels Zwei-Photonen-Polymerisation. Ruhr-University Bochum. Zyla, G., Surkamp, N., Gurevich, E. L., Esen, C., Hofmann, R. M., 2021. Share of the invention: 40%.
2. WO 2021/254777 A1, Herstellung eines Objekts mittels Zwei-Photonen-Polymerisation/Production of an object by way of two-photon polymerization. Ruhr-University Bochum. Zyla, G., Surkamp, N., Gurevich, E. L., Esen, C., Hofmann, R. M., 2021. Share of the invention: 40%.