

Curriculum Vitae

--- March 2026 ---

Mikael Karlsson, Senior Lecturer, Associate Professor

Name: Mikael Karlsson
Born: July 13, 1970
Marital status: Married (three children)
Nationality: Swedish
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Current position

2022 (November) – now

Head of the Division of Applied Materials Science, The Ångström Laboratory, Uppsala University

2018 (August) – now

Senior Lecturer (Universitetslektor) in Applied Material Science; specializing in Diamond Optics. Division of Applied Materials Science, The Ångström Laboratory, Uppsala University, Sweden. Head of the research group in Diamond Optics.

2010 – now

CEO Adamantis AB, Sweden

Previous positions

2009 – 2021

CTO Molecular Fingerprint Sweden AB, Sweden

2013 – 2018 (July)

Researcher at the Division of Applied Materials Science, The Ångström Laboratory, Uppsala University

2007 – 2017

Project leader in Uppsala Berzelii Technology Centre for Neurodiagnostics, The Ångström Laboratory, Uppsala University

2007 (March) – 2012

Researcher at the Division of Micro Systems Technology, The Ångström Laboratory, Uppsala University

2006 – 2007 (June)

Head of technological development, Rolling Optics AB, Sweden

2003 – 2005

Researcher at the Division of Materials Science, The Ångström Laboratory, Uppsala University

1997 – 1998

Research assistant, fabrication of micro opto electro mechanical systems (MOEMS), Division of Materials Science, The Ångström Laboratory, Uppsala University

Education:

2012-11-12 Associate Professor (Docent) in Engineering Science with specialization in microsystems technology, Uppsala University, Sweden

2003-04-14 PhD in Engineering Science with specialization in materials science, Uppsala University, Sweden

1998-03-24 MSc (Civilingenjör) in Materials Engineering, Uppsala University, Sweden

Selected publications

Peer-reviewed original articles (international)

1. P. Forsberg, A. Angelsten, and M. Karlsson, “Controlling sputter angles with a 3D mask: Re-masking and depth adjustment of optical gratings”, ***Diamond & Related Materials*** **164**, 1-7 (2026)
doi.org/10.1016/j.diamond.2026.113491
2. A. Angelsten, P. Forsberg, H. Engqvist, W. Xia, and M. Karlsson, “Waveguide Spectroscopy for Differentiation of Bacteria”, ***Analytical Chemistry*** **97**, 21314-21323 (2025)
doi.org/10.1021/acs.analchem.5c02661
3. I. Laginja, Ó. Carrión-González, R. Laugier, E. Matthews, L. Leboulleux, A. Potier, A. Lau, O. Absil, P. Baudoz, B. Biller, A. Boccaletti, W. Brandner, A. Carlotti, G. Chauvin, É. Choquet, D. Doelman, K. Dohlen, M. Ferrari, S. Hinkley, E. Huby, M. Karlsson, O. Krause, J. Kühn, J-M. Le Duigou, J. Mazoyer, D. Mesa, M. Min, D. Mouillet, L.M. Mugnier, G. Orban de Xivry, F. Snik, D. Vassallo, A. Vigan, and P. de Visser, “Advancing European high-contrast imaging R&D towards the Habitable Worlds Observatory”, ***Astrophysics and Space Science*** **370:29** (2025)
doi.org/10.1007/s10509-025-04417-8
4. P. Forsberg, P. Karvinen, S. Ronayette, M. Kuittinen, O. Absil, L. König, C. Delacroix, G.O. De Xivry, J-C. Barriere, E. Pantin, and M. Karlsson, “Making the diamond vortex phase masks for the METIS instrument”, ***Diamond & Related Materials*** **146**, 1-9 (2024)
doi:10.1016/j.diamond.2024.111237
5. P. Forsberg, L. Perez, and M. Karlsson, “Enhancing sensitivity of mid-infrared waveguide spectroscopy with a high index thin film”, ***ACS Applied Optical Materials*** **1**, 536-543 (2023)
doi:10.1021/acsaom.2c00108

6. L. König, O. Absil, M. Lobet, C. Delacroix, M. Karlsson, G.O. De Xivry, and J Loicq, “Optimal design of the annular groove phase mask central region”, *Optics Express* **30**, 27048-27063 (2022)
doi:10.1364/OE.461047
7. T. Chlouba, R. Shiloh, P. Forsberg, M. Hamberg, M. Karlsson, M. Kozák, and P. Hommelhoff, “Diamond-based dielectric laser acceleration”, *Optics Express* **30**, 505-510 (2022)
doi:10.1364/OE.442752
8. P. Forsberg, P. Hollman, and M. Karlsson, “High sensitivity infrared spectroscopy with a diamond waveguide on aluminium nitride” *Analyst* **146**, 6981-6989 (2021)
doi:10.1039/d1an01009c
9. K. Wagner, A. Boehle, P. Pathak, M. Kasper, R. Arsenault, G. Jakob, U. Käufl, S. Leveratto, A-L. Maire, E. Pantin, R. Siebenmorgen, G. Zins, O. Absil, N. Ageorges, D. Apai, A. Carlotti, E. Choquet, C. Delacroix, K. Dohlen, P. Duhoux, P. Forsberg, E. Fuenteseca, S. Gutruf, O. Guyon, E. Huby, D. Kampf, M. Karlsson, P. Kervella, J. P. Kirchbauer, P. Klupar, J. Kolb, D. Mawet, M. N’Diaye, G. Orban de Xivry, S. Quanz, A. Reutlinger, G. Ruane, M. Riquelme, C. Soenke, M. Sterzik, A. Vigan, and T. de Zeeuw, “Imaging low-mass planets within the habitable zone of α Centauri” *Nature Communications* **12**, 1-7 (2021)
doi:10.1038/s41467-021-21176-6
10. J. J. Wang, S. Ginzburg, B. Ren, N. Wallack, P. Gao, D. Mawet, C. Z. Bond, S. Cetre, P. Wizinowich, J. R. De Rosa, G. Ruane, M. C. Liu, O. Absil, C. Alvarez, C. Baranec, E. Choquet, M. Chun, D. Defrère, J-R. Delorme, G. Duchêne, P. Forsberg, A. Ghez, O. Guyon, D. N. B. Hall, E. Huby, A. Jolivet, R. Jensen-Clem, N. Jovanovic, M. Karlsson, S. Lilley, K. Matthews, F. Ménard, T. Meshkat, M. Millar-Blanchaer, H. Ngo, G. Orban de Xivry, C. Pinte, S. Ragland, E. Serabyn, E. Vargas Catalán, J. Wang, E. Wetherell, P. J. Williams, M. Ygouf, and B. Zuckerman, “Keck/NIRC2 L'-Band Imaging of Jovian-Mass Accreting Protoplanets around PDS 70,” *Astronomical Journal* **159**, 1-15 (2020)
doi:10.3847/1538-3881/ab8aef
11. J. Haas, E. Vargas Catalán, P. Piron, M. Karlsson, and B. Mizaikoff, “Infrared Spectroscopy based on Broadly Tunable Quantum Cascade Lasers and Polycrystalline Diamond Waveguides,” *Analyst* **143**, 5112-5119 (2018)
doi:10.1039/C8AN00919H
12. E. Vargas Catalán, P. Piron, A. Jolivet, P. Forsberg, C. Delacroix, E. Huby, O. Absil, I. Vartiainen, M. Kuittinen, and M. Karlsson, “Subwavelength diamond gratings for vortex coronagraphy: towards annular groove phase mask for shorter wavelengths and topological charge 4 designs,” *Optical Materials Express* **8**, 1976-1987 (2018)
doi:10.1364/OME.8.001976
13. P. Piron, E. Vargas Catalán, O. Absil, and M. Karlsson, “Birefringence measurements of diamond space-variant subwavelength gratings,” *Applied Optics* **57**, 4909-4917 (2018)
doi:10.1364/AO.57.004909

14. D. Mawet, É. Choquet, O. Absil, E. Huby, M. Bottom, E. Serabyn, B. Femenia, J. Lebreton, K. Matthews, C. A. Gomez Gonzalez, O. Wertz, B. Carlomagno, V. Christiaens, D. Defrère, C. Delacroix, P. Forsberg, S. Habraken, A. Jolivet, M. Karlsson, J. Milli, C. Pinte, P. Piron, M. Reggiani, J. Surdej, and E. Vargas Catalán, “Characterization of the inner disk around HD 141569 A from KECK/NIRC2 L-band vortex coronagraphy,” *The Astronomical Journal* **153**, 144, 1-10 (2017)
doi:10.3847/1538-3881/153/1/44
15. E. Serabyn, E. Huby, K. Matthews, D. Mawet, O. Absil, B. Femenia, P. Wizinowich, M. Karlsson, M. Bottom, R. Campbell, B. Carlomagno, D. Defrère, C. Delacroix, P. Forsberg, C. Gomez Gonzalez, S. Habraken, A. Jolivet, K. Liewer, S. Lilley, P. Piron, M. Reggiani, J. Surdej, H. Tran, E. Vargas Catalán, and O. Wertz, “The W. M. Keck Observatory infrared vortex coronagraph and a first image of HIP 79124 B,” *The Astronomical Journal* **153**, 143, 1-7 (2017)
doi:10.3847/1538-3881/153/1/43
16. E. Vargas Catalán, E. Huby, P. Forsberg, A. Jolivet, P. Baudoz, B. Carlomagno, C. Delacroix, S. Habraken, D. Mawet, J. Surdej, O. Absil, and M. Karlsson, “Optimizing the subwavelength grating of L-band annular groove phase masks for high coronagraphic performance,” *Astronomy & Astrophysics* **595**, A127, 1-8 (2016)
doi:10.1051/0004-6361/201628739
17. P. Forsberg, M. Malmström, E. Vargas Catalán, and M. Karlsson, “Diamond grating waveplates,” *Optical Materials Express* **6**, 2024-2030 (2016)
doi:10.1364/OME.6.002024
Times cited: 9
18. P.O. Andersson, P. Viberg, P. Forsberg, F. Nikolajeff, L. Österlund, and M. Karlsson, “Nanocrystalline diamond sensor targeted for selective CRP detection: An ATR-FTIR spectroscopy study,” *Analytical and Bioanalytical Chemistry* **408**, 3675-3680 (2016)
doi:10.1007/s00216-016-9485-0
19. X. Wang, M. Karlsson, P. Forsberg, M. Sieger, F. Nikolajeff, L. Österlund and B. Mizaikoff, “Diamonds Are a Spectroscopist’s Best Friend: Thin-Film Diamond Mid-Infrared Waveguides for Advanced Chemical Sensors/Biosensors,” *Analytical Chemistry* **86**, 8136-8141 (2014)
doi:10.1021/ac5011475
20. D. Mawet, O. Absil, C. Delacroix, J. H. Girard, J. Milli, J. O’Neal, P. Baudoz, A. Boccaletti, P. Bourget, V. Christiaens, P. Forsberg, F. Gonté, S. Habraken, C. Hanot, M. Karlsson, M. Kasper, J.-L. Lizon, K. Muzic, R. Olivier, E. Peña, N. Slusarenko, L. E. Tacconi-Garman and J. Surdej, “L’-band AGPM vector vortex coronagraph’s first light on VLT/NACO Discovery of a late-type companion at two beamwidths from an F0V star,” *Astronomy & Astrophysics* **552**, L13, 1-4 (2013)
doi:10.1051/0004-6361/201321315
21. P. Forsberg and M. Karlsson, “High aspect ratio optical gratings in diamond,” *Diamond & Related Materials* **34**, 19-24 (2013)
doi:10.1016/j.diamond.2013.01.009

22. P. Forsberg and M. Karlsson, "Inclined surfaces in diamond: broadband antireflective structures and coupling light through waveguides," *Optics Express* **21**, 2693-2700 (2013)
doi:10.1364/OE.21.002693
23. P. Forsberg, F Nikolajeff and M. Karlsson, "Cassie–Wenzel and Wenzel–Cassie transitions on immersed superhydrophobic surfaces under hydrostatic pressure," *Soft Matter* **7**, 104-109 (2011)
doi:10.1039/c0sm00595a
24. T. Näsström, T. Fagerqvist, M. Barbu, M. Karlsson, F. Nikolajeff, A. Kasrayan, M. Ekberg, L. Lannfelt, M. Ingelsson and J. Bergström, "The lipid peroxidation products 4-oxo-2-nonenal and 4-hydroxy-2-nonenal promote the formation of α -synuclein oligomers with distinct biochemical, morphological, and functional properties," *Free Radical Biology & Medicine* **50**, 428-437 (2011)
doi:10.1016/j.freeradbiomed.2010.11.027
25. M. Karlsson, P. Forsberg and F. Nikolajeff, "From Hydrophilic to Superhydrophobic: Fabrication of Micrometer-Sized Nail-Head-Shaped Pillars in Diamond," *Langmuir* **26**, 889–893 (2010)
doi:10.1021/la902361c
26. M. Karlsson and F. Nikolajeff, "Diamond micro-optics: microlenses and antireflection structured surfaces for the infrared spectral region," *Optics Express* **11**, 502-507 (2003)
doi:10.1364/OE.11.000502

Invited talks

- P. Forsberg and M. Karlsson, "An Ultra-Sensitive Biosensor Based on Mid-Infrared Diamond Waveguide Spectroscopy" 2023 MRS Fall Meeting & Exhibit (November 26 – December 1, 2023, Boston, USA)
- M. Karlsson, "Development of an Ultra-Sensitive Biosensor Based on Mid-Infrared Diamond Waveguide Spectroscopy," 2019 MRS Fall Meeting & Exhibit (December 1-6, 2019, Boston, USA)
- M. Karlsson, "Diamond waveguide infrared spectroscopy for applications in life science" Optics & Photonics in Sweden 2019 (October 16-17, 2019, Stockholm, Sweden)
- M. Karlsson, "Seeing the light through diamonds: Direct detection of extrasolar planets" Symposium LATSIS 2019 on Diamond Photonics; Physics, Technologies & Applications (May 19-22, 2019, Lausanne, Switzerland)
- M. Karlsson, "Seeing the Light through Diamonds: How to find Extrasolar Planets" 2016 Celsius-Linné Symposium, Winter Light - in connection with the Celsius-Linné Lectures 2016 by Eli Yablonovitch (University of California, Berkley, USA) and Lene Vestergaard-Hau (Harvard University, USA) (February 19, 2016, Uppsala, Sweden)

- M. Karlsson, "Research at Ångström Laboratory, Uppsala University and micro- and nanostructuring of semiconductor materials" The Second Jiangsu-Europe International Conference on New Energy (JSSUN2015) and the twelfth Yangtze River Delta Energy Forum (November 5-7, 2015, Nanjing, China)

- M. Karlsson, "Diamond Photonics; Diamond Optics for Direct Imaging of Extrasolar Planets" Optics & Photonics in Sweden 2015 (October 28-29, 2015, Stockholm, Sweden)

- Y. Cai, F. Edin, H. Li and M. Karlsson, "Ordered auditory neuron growth on micro-structured nanocrystalline diamond surface," *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9557**, Nanobiosystems: Processing, Characterization, and Applications VIII (August 9-13, 2015, San Diego, CA, USA)

- M. Karlsson, "Diamond optics for direct imaging of extrasolar planets" Optics & Photonics in Sweden 2013 (October 22-23, 2013, Uppsala, Sweden)

- D. Mawet, N. Murakami, C. Delacroix, E. Serabyn, O. Absil, N. Baba, J. Baudrand, A. Boccaletti, R. Burruss, R. Chipman, P. Forsberg, S. Habraken, S. Hamaguchi, C. Hanot, A. Ise, M. Karlsson, B. Kern, J. Krist, A. Kuhnert, M. Levine, K. Liewer, S. McClain, S. McEldowney, B. Mennesson, D. Moody, H. Murakami, A. Niessner, J. Nishikawa, N. O'Brien, K. Oka, P. Park, P. Piron, L. Pueyo, P. Riaud, M. Sakamoto, M. Tamura, J. Trauger, D. Shemo, J. Surdej, N. Tabiryan, W. Traub, J. Wallace and K. Yokochi, "Taking the vector vortex coronagraph to the next level for ground- and space-based exoplanet imaging instruments: review of technology developments in the USA, Japan, and Europe" *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **8151**, Techniques and Instrumentation for Detection of Exoplanets V (August 21-25, 2011, San Diego, CA, USA)

- F. Nikolajeff and M. Karlsson, "Diamond optics - An emerging technology for demanding applications," 10th Microoptics conference (September 1-3, 2004, Jena, Germany)

- F. Nikolajeff and M. Karlsson, "Diamond optics: fabrication and applications," *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **5347**, Photonics West 2004, Conference on Micromachining Technology for Micro-Optics and Nano-Optics II (January 24-29, 2004, San Jose, CA, USA)

- M. Karlsson, H. Högström and F. Nikolajeff, "Diamond Micro-Optics," ADC/FCT 2003, 7th International Conference on the Application of Diamond Films and Related Materials, NASA Center for Aerospace Information 115-119 (18-21 August, 2003, Tsukuba, Japan)

- M. Karlsson and F. Nikolajeff, "Diamond - Optics Best Friend," 4th Micro Structure Workshop (20-21 March, 2002, Bålsta, Sweden)

Research visits

- July 2023 CEA-Saclay, Paris, France.

- 2018-12-15 – 2019-01-14 Institute of Analytical and Bioanalytical Chemistry (Prof. Dr. Boris Mizaikoff), Ulm University, Germany.

- 2017-07-09 – 2017-08-08 Institute of Analytical and Bioanalytical Chemistry (Prof. Dr. Boris Mizaikoff), Ulm University, Germany.

- 2017-01-09 – 2017-02-08 Institute of Analytical and Bioanalytical Chemistry (Prof. Dr. Boris Mizaikoff), Ulm University, Germany.

Invited scientific presentations at universities and research centers

- M. Karlsson, “Diamond Coronagraphs for Direct Imaging of Extrasolar Planets,” Presented at Invited seminar at Div. of Astronomy and Space Physics, Uppsala University, Uppsala, Sweden (February 13, 2025)

- M. Karlsson, “Microstructures on diamond,” Presented at 2nd international vortex workshop, University of Liège, Belgium (October 9-11, 2023)

- E. Vargas Catalan and M. Karlsson, “Fabrication process for the annular phase groove mask (AGPM),” Presented at 1st international vortex workshop, California Institute of Technology, Pasadena, USA (August 15-17, 2016)

- M. Karlsson, “Diamond Optics for Direct Imaging of Extrasolar Planets,” Presented at Invited seminar at Div. of Astronomy and Space Physics, Uppsala University, Uppsala, Sweden (May 26, 2016)

- M. Karlsson, “Research at The Ångström Laboratory, Uppsala University and micro- and nanostructuring of diamond,” Presented at Invited seminar at China University of Geosciences, Wuhan, China (November 4, 2015)

- M. Karlsson, “Research at The Ångström Laboratory, Uppsala University and micro- and nanostructuring of diamond,” Presented at Invited seminar at Hubei University, Wuhan, China (November 3, 2015)

- M. Karlsson, “Diamond micro optics for ground based exoplanet imaging instruments,” Presented for a delegation from NASA (USA) at an Invited seminar at Uppsala University, Uppsala, Sweden (June 19, 2012)

- M. Karlsson, “Microstructures in diamond for applications in optics and biosensing,” Presented at Invited seminar at Fraunhofer Institute for Applied Solid State Physics, Freiburg, Germany (May 30, 2011)

- M. Karlsson, “Carbon-based microstructures for label-free biodetection,” Presented at Invited seminar at The Institute for Bioengineering of Catalonia (IBEC), Barcelona, Spain (May 31, 2010)

- M. Karlsson, “Microstructure technology for applications within photonics and life sciences,” Invited seminar at The Royal Institute of Technology – MyFab meeting, Stockholm, Sweden (April 2-3, 2009)

- M. Karlsson, “Diamond Micro-Optics: Fabrication and Applications,” Presented at Invited seminar at Fraunhofer USA - Center for Coatings and Diamond Technologies, East Lansing, MI, USA (July 11, 2004)

- F. Nikolajeff and M. Karlsson, “Academic and industrial research on micro-optics in Uppsala, Sweden,” Presented at Invited seminar at HRL Laboratories, Malibu, CA, USA (January 23, 2004)

- F. Nikolajeff and M. Karlsson, “Diamond microstructures: an enabling technology for demanding applications,” Presented at Invited seminar at Jet Propulsion Laboratory - NASA, Pasadena, CA, USA (January 22, 2004)

Book chapters

- “Diamond Waveguides for Infrared Spectroscopy and Sensing” (Á.I. López-Lorente, M. Karlsson, L. Österlund and B. Mizaikoff) in *Springer Series on Chemical Sensors and Biosensors (Methods and Applications)*, Springer, Berlin, Heidelberg (2017)
doi:10.1007/5346_2017_15

- “Refractive and diffractive diamond optics” (F. Nikolajeff and M. Karlsson) in *Optical Engineering of Diamond*, eds. R. Mildren and J. Rabeau, Wiley-VHC (2013)
doi:10.1002/9783527648603.ch4

Grants

- VR (The Swedish Research Council) project research grant (“Vortex coronagraphs for space-based telescopes”, 2025 – 2028).

- WASP and WISE to initiate collaboration in the areas of AI (“Rapid diagnostics and database of bacteria and their reactions to antibiotics and antimicrobial materials through high-throughput infrared (IR) spectroscopy and machine learning”, 2024), co-PI, together with Uppsala University and KTH-Royal Institute of Technology, Sweden.

- Swedish–French Foundation (“Detect Earth-likes planets using diamond coronagraphs” 2023 – 2024)

- ERC Consolidator Grant (“EPIC – Earth-like Planet Imaging with Cognitive computing”, 2019 – 2024), co-PI, together with University of Liège, Belgium.

- VR (The Swedish Research Council) project research grant (“Development of a diamond waveguide sensor for ultra sensitive chemical analysis using tunable mid-IR quantum cascade lasers”, 2015 – 2019).

- ERC-starting grant (“VORTEX – diamond coronagraphs for direct imaging of extrasolar planets”, 2013 – 2018), co-PI, together with University of Liège, Belgium.

- Research funded by The Swedish Research Council (2007 – 2018), The Swedish Innovation Agency (2007 – 2017), Horizon 2020 (2014 – 2018), Breakthrough Initiative (2018-2020).

- Carl Trygger Foundation, 2 year postdoc grant for Dr. Pierre Piron (former University of Liège, Belgium), 2016-2018.

Awards

- VINNU 2010, government award to Molecular Fingerprint Sweden AB. The 10 most promising new started company's in Sweden was awarded with 300.000 SEK (28 k€, to use in the critical start-up phase of a company).
- SKAPA 2004, winner in the region final. Competition in the best innovation in Sweden, arranged by the Swedish Inventor Society.
- VentureCup 2003/2004, winner in the region final in step 2 (of 3). Competition in the best business plan.
- InnovationCup 2003, second place in the region final. Competition in the best innovation in Sweden, arranged by an insurance company and a newspaper focused on industry.
- VINNU 2003, award to Adamantis AB. The 10 most promising new started company's in Sweden was awarded with 300.000 SEK (28 k€, to use in the critical start-up phase of a company).
- Bjurzons premium, for excellent PhD thesis at Uppsala University within the faculty of natural- and engineering science during 2003.

Commissions of trust

- Invited to a 5 day long workshop at the Keck Institute for Space Studies (Caltech), for discussions on the development of the next generation of coronagraphs based on meta surfaces. These new types of coronagraphs need to be developed for installation on the coming space based telescope Habitable World Observatory (HWO), which NASA plan to have flying in 2040. This will make it possible to detect an analogue to our Earth (September 23-27, 2024, California Institute of Technology, USA)
- Subject representative and member of the recruitment committee for Assistant Professor in Optical Materials with Specialization in Energy Materials at Uppsala University, 2024
- Session chair at workshop on R&D for Space-Based HCI in Europe (March 21-22, 2024, Paris, France)
- Member of the PhD jury, "Development of Metasurface Implementations for high-performance Vortex Phase Masks", Candidate: Lorenzo König (October 12, 2023, Université de Liège, Belgium)
- Member of the PhD jury, "Advanced Diamond Microfabrication for Micro-optics and Photonics", Candidate: Marcell Kristof Kiss (September 30, 2019, École polytechnique fédérale de Lausanne EPFL, Switzerland)
- Member of the PhD jury, "Development and exploitation of an infrared coronagraphic test bench for vortex phase mask performance assessment", Candidate: Aïssa Jolivet (September 9, 2019, Université de Liège, Belgium)

- Member of the Technical Program Committee for the Symposium LATSIS 2019 on Diamond Photonics; Physics, Technologies & Applications (May 19-22, 2019, Lausanne, Switzerland)
- Session chair at Symposium LATSIS 2019 on Diamond Photonics; Physics, Technologies & Applications (May 19-22, 2019, Lausanne, Switzerland)
- Corresponding member of « *Société Royale des Sciences de Liège* », Belgium (elected on January 29th, 2015)
- Member of the PhD jury, “Space-variant optical phase retarders in liquid crystal polymers and their applications”, Candidate: Pierre Piron (February 10, 2014, Université de Liège, Belgium)
- Member of the PhD jury, “Exoplanet imaging with mid-infrared vector vortex coronagraphs: design, manufacture, validation and first light of the annular groove phase mask”, Candidate: Christian Delacroix (June 25, 2013, Université de Liège, Belgium)
- Session chair at ADC/FCT 2003, 7th International Conference on the Application of Diamond Films and Related Materials, NASA Center for Aerospace Information (18-21 August, 2003, Tsukuba, Japan)
- PhD-evaluation; Member of The Examination Committee for a PhD-degree at Swedish universities:
 1. Uppsala University, Sweden 2023-06-08; Candidate: Viktor Djurberg, “Low Temperature Charge Transport in Diamond” (Chairman in the examination committee).
 2. KTH - Royal Institute of Technology, Stockholm, Sweden 2019-05-10; Candidate: Hoda Kianirad, “Studies on Domain Dynamics in Nonlinear Optical Ferroelectric Oxide Crystals”.
 3. KTH - Royal Institute of Technology, Stockholm, Sweden 2018-10-12; Candidate: Carlos Errando Herranz, “Photonic MEMS for optical information technologies”.
 4. Uppsala University, Sweden 2018-06-08; Candidate: Nattakarn Suntornwipat, “Diamond devices based on valley polarization”.
 5. Uppsala University, Sweden 2015-10-16; Candidate: Jiangtao Chu, “Microdialysis sampling of macromolecules, fluid characteristics, extraction efficiency and enhanced performance”.
 6. Uppsala University, Sweden 2015-05-22; Candidate: Camilla Russell, “Development of electrical readouts for amplified single molecule detection”.
 7. KTH - Royal Institute of Technology, Stockholm, Sweden 2014-05-21; Candidate: Azizahalhakim Sudirman, “Increased functionality of optical fibres for life-science applications”.
 8. KTH - Royal Institute of Technology, Stockholm, Sweden, 2013-05-30; Candidate: Kai Seger, “Compact solid-state lasers in the near infrared and visible spectral range”.
 9. KTH - Royal Institute of Technology, Stockholm, Sweden, 2013-04-19; Candidate: Mikael Antelius, “Wafer-scale vacuum and liquid packaging concepts for an optical thin-film gas sensor”.

Referee assignment

Acting as a reviewer in several journals, including in: Journals of Materials Chemistry, ACS Applied Materials & Interfaces, Langmuir, Diamond and Related Materials, Applied Optics, Optics Letters and Optics Express.

Patents

- L. Österlund, P. O. Andersson, M. Karlsson and F. Nikolajeff, “Optical sensor unit for evanescent wave spectroscopy,” granted in Sweden, France, Germany, Great Britain, Switzerland and USA.

Teaching

- Course responsible (examiner) and teacher, also created the course (in English) “Industrial development project” (10 credits, 1TM116) for MSc students in Industrial Management and Innovation, Uppsala University. 2018 – now

- Teacher “Surface Characterisation” (5 credits, 1TM144) for MSc students in Materials Engineering and MSc students in Chemical Engineering, Uppsala University. 2026 – now

- Course responsible and examiner, “Degree Project in Materials Engineering” (30 credits, 1TM131) for MSc students in Materials Engineering, Uppsala University. 2021 – now

- Director for the Master’s Programme in Materials Engineering (120 credits), Uppsala University. 2020-01-01 – 2026-06-30

- Course responsible (examiner), (in English) “Materials and Sustainable Development” (5 credits, 1TM115) for MSc students in Materials Engineering and MSc students in Additive Manufacturing, Uppsala University. 2021 – 2026

- Course responsible (examiner) and teacher, also created the course (in English) “Advanced Course on Topics in Materials Engineering” (5 credits, 1TM137) for MSc students in Materials Engineering, Uppsala University. 2021 – 2024

- Course responsible (examiner) and teacher, also created the course (in English) “Introduction to Materials Engineering” (5 credits, 1TM108) for MSc students in Materials Engineering, Uppsala University. 2020 – 2024

- Micro-optics (in English), within the course “Micro- and nanotechnology II” (5 credits, 1TE018), for MSc students in Engineering Science, Uppsala University, 2019, 2021 – 2022.

- Micro-optics, within the course “Micro- and nanotechnology II” (5 credits, 1TE018), for MSc students in Engineering Science, Uppsala University, 2011 – 2018, 2020.

- Course responsible, also created the course “Micro-optics” (7.5 credits) for graduate students in Engineering Physics, Uppsala University, 2017-2018.

- Micro-optics (in English), within the course “Micro system technology II” (4,5 hp), for MSc students in Engineering Science, Uppsala University. 2003 – 2005, 2007 – 2010.

- Surface profile analyse (4,5 hp), within the course “Material analyse” for MSc students in Engineering Science, Uppsala University. 1999 – 2002.

- Subject reader for diploma work in Engineering Physics, MSc programme, Uppsala University: 1. Jonas Ferm “Family development: An investigation of Ni replication processes” (2014), 2. Josefin Karlsson “Hydrofil beläggning för medicinskteknisk produkt” (2014), 3. Max Karlsson “Method for the Characterisation of Grating Based Holographic Paper” (2016), 4. Johanna Ferritsius, confidential (2017), 5. Karwan Rasouli “Laser Beam Pathway Design and Evaluation for Dielectric Laser Acceleration” (2019), 6. Gustav Carlsson “An MST approach to skin perforation using wet etched silicon microneedles” (2020), 7. Yuchen Liu “3D printing of ceramic composites with improved mechanical strength” (2023), 8. Tejas Nagaraj Udupa “Parameters Influence on Gas Metal Arc Welding Additive Manufacturing” (2024).

Leadership education

- Clear leadership (4 days), 2026. Given by the Unit for HR strategies, Uppsala University.

- Law in practice (2 days), 2026. Given by the Career and Leadership Development Centre/Legal Affairs Division, Uppsala University.

- The Manager's Programme (12 days), 2025. Given by the Unit for HR strategies, Uppsala University.

- Clear partnership (2 days), 2024. Given by the Unit for HR strategies, Uppsala University.

- Ekonomispelet – Uppsala University’s in-house finance game (1 day) 2023. Given by the Division for Quality Enhancement; Career and Leadership in Academia, Uppsala University.

- Leading and developing in academia (7 days), 2020. Given by the Division for Quality Enhancement; Career and Leadership in Academia, Uppsala University.

Pedagogical education

- Student-centered learning and student-activating teaching (1/2 day), 2018. Given by the Faculty of Science and Technology; University education councils, Uppsala University.

- Active students in group projects (1 week, 1.5 hp), 2017. Given by the Division for Quality Enhancement; Academic Teaching and Learning, Uppsala University.

- Course assessment (seminar, 1/2 day), 2017. Given by the Division for Quality Enhancement; Academic Teaching and Learning, Uppsala University.

- Supervising PhD Students (3 weeks, 4.5 hp), 2011. Given by the Division for Development of Teaching and Learning, Uppsala University.

- Supervising Students for Degree Projects (1 week, 1.5 hp), 2011. Given by the Division for Development of Teaching and Learning, Uppsala University.

- University Teacher Training Course (5 weeks, 7.5 hp), 2011. Given by the Division for Development of Teaching and Learning, Uppsala University.

- Presentation techniques (4 weeks, 6 hp), 1998. Given by the Department of Education (Staffan Sjöberg), Uppsala University.

Popular science articles/presentations

- M. Karlsson, “Med deras redskap har något som kan vara en planet hittats”, P4 Uppland, Sveriges Radio, (English translation – “With their tool, something that could be a planet has been found” in the Swedish Broadcasting Corporation), 20 February 2021.

- M. Kasper, R. Arsenault, U. Käufl, G. Jakob, S. Leveratto, G. Zins, E. Pantin, P. Duhoux, M. Riquelme, J-P. Kirchbauer, J. Kolb, P. Pathak, R. Siebenmorgen, C. Soenke, E. Fuentesecca, M. Sterzik, N. Ageorges, S. Gutruf, D. Kampf, A. Reutlinger, O. Absil, C. Delacroix, A-L. Maire, E. Huby, O. Guyon, P. Klupar, D. Mawet, G. Ruane, M. Karlsson, K. Dohlen, A. Vigan, M. N’Diaye, S. Quanz and A. Carlotti, “NEAR: First Results from the Search for Low-Mass Planets in α Cen”, *The Messenger (ESO)* **178**, 5-9, (2019)
doi:10.18727/0722-6691/5163

- M. Karlsson, O. Absil and Thomas von Heijne, “Ny metod att se planeter - svenska och belgiska forskare letar liv i universum”, Rapport, SVT1, Sveriges Television (English translation – “New method to see planets - Swedish and Belgian scientists search for life in the universe” in Rapport – Sweden's largest news program, Swedish public service television company), 2 April 2017.

- M. Karlsson, “Uppsalaforskare letar liv i universum – jakten på en jordliknande planet”, P4 Uppland, Sveriges Radio, 5 delar (English translation – “Uppsala scientist searching for life in universe – the hunt for earth like planets ” in the Swedish Broadcasting Corporation), January-February 2017.

- M. Kasper, R. Arsenault, H-U. Käufl, G. Jakob, E. Fuentesecca, M. Riquelme, R. Siebenmorgen, M. Sterzik, G. Zins, N. Ageorges, S. Gutruf, A. Reutlinger, D. Kampf, O. Absil, B. Carlomagno, O. Guyon, P. Klupar, D. Mawet, G. Ruane, M. Karlsson, E. Pantin and K. Dohlen, “NEAR: Low-mass Planets in α Cen with VISIR”, *The Messenger (ESO)* **169**, 16-20, (2017)
doi:10.18727/0722-6691/5033

- Materials Today (Elsevier), “Diamond pillars are all ears” December 8, 2015, (written by Cordelia Sealy, describing Mikael Karlsson, Hao Li and Helge Rask-Andersen latest research in diamond micro pillars for cochlear implants)

- D. Mawet, O. Absil, J.H. Girard, J. Milli, J. O’Neal, C. Delacroix, P. Baudoz, A. Boccaletti, P. Bourget, V. Christiaens, P. Forsberg, F. Gonté, S. Habraken, C. Hanot, M. Karlsson, M. Kasper, A-M. Lagrange, J-L. Lizon, K. Muzic, E. Peña, R. Olivier, N. Slusarenko, L.E. Tacconi-Garman and J. Surdej, “High Contrast Imaging with the New Vortex Coronagraph on NACO”, *The Messenger (ESO)* **152**, 8-13 (2013)

- M. Karlsson and F. Nikolajeff, “Diamantfeber” (Lena Liljeborg), Kunskapskanalen, Sveriges Television (English translation – “Diamond fever” in the Swedish Television), 2004

- M. Karlsson, “Diamantfönster mot rymden”, Från labbet till börsen, Vetandets Värld, Sveriges Radio (English translation – From the lab to the stock exchange “Diamond window against the space,” in the Swedish Broadcasting Corporation), 11 December 2003

- Laser Focus World, “Diamond is a machinist’s best friend” April 2003, 39 (4), p. 26-27 (written by John Wallace, describing M. Karlsson and F. Nikolajeff latest research in diamond optics)

- The Laser User Magazine, The Association of Laser Users (AILU), “Diffractive optical elements in diamond” June 2003 (written by M. Karlsson and F. Nikolajeff)

Supervisor of postdoctoral researchers and mentorship

- 2018-03-12 – 2020-12-31, Mentor for Dr. Pontus Forsberg, “Diamond photonics”.

- 2016-03-01 – 2018-05-31, Main supervisor for Dr. Pierre Piron (PhD at University of Liège, Belgium), “Optical evaluation of diamond waveguides and polarization analysis of diamond coronagraphs using quantum cascade lasers”.

- 2015-07-01 – 2016-01-31, Main supervisor for Dr. Mikael Malmström (PhD at KTH, Sweden), “Design and optical evaluation of diamond waveguides”.

- 2014-01-01 – 2015-06-30, Assistant supervisor for Dr. Mikael Malmström (PhD at KTH-Royal Institute of Technology, Sweden), Design and optical evaluation of diamond waveguides”.

- 2013-09-15 – 2015-06-30, Main supervisor for Dr. Pontus Forsberg (PhD in my group at Uppsala University), “Vortex phase mask manufacturing”.

Supervisor of PhD students

- 2024-02-05 – now, Main supervisor for MSc Arvid Angelsten.

- 2019-10-07 – 2023-10-12, Assistant supervisor for MSc Lorenzo König; PhD degree 2023-10-12 “Development of Metasurface Implementations for high-performance Vortex Phase Masks”, Université de Liège, Belgium.

- 2013-11-04 – 2018-05-31, Main supervisor for MSc Ernesto Vargas Catalan; PhD degree 2018-05-18 “Microfabrication of Optical Components in Synthetic Diamond Infrared Optics for Applications in Astronomy and Spectroscopy”.

- 2013-01-01 – 2016-06-01, Assistant supervisor for MSc Yixiao Cai; PhD degree 2016-06-01 “Bio-Nano Interactions: Synthesis, Functionalization and Characterization of Biomaterial Interfaces”.

- 2011-01-01 – 2013-03-31, Main supervisor for MSc Pontus Forsberg; PhD degree 2013-03-08 “Diamond Microfabrication for Applications in Optics and Chemical Sensing”.

- 2009-03-19 – 2010-12-31, Assistant supervisor for MSc Pontus Forsberg, Microsystem Technology, Uppsala University.

- 2005 – 2006, Assistant supervisor for MSc Axel Lundvall, “Micro-optics in polymer foils”, Microsystem Technology, Uppsala University.

Supervision of visiting PhD students/postdocs

- PhD student Carina Dettenrieder, Ulm University, Germany, 6 month stay in my group 2018, “Surface functionalization of waveguides”.

- PhD student Dervis Türkmen, Ulm University, Germany, 6 month stay in my group 2018, “Infrared spectroscopy using surface functionalization of waveguides”.

- PhD student Julian Haas, Ulm University, Germany, 6 month stay in my group 2017, “Diamond waveguide infrared spectroscopy of proteins”.

- Dr. Ángela I. López Lorente, Ulm University, Germany, 1 month stay in my group 2015, “Protein analysis using microfabricated diamond waveguides”.

- PhD student Christian Delacroix, University of Liège, Belgium, 1 month stay in my group 2011, “Fabrication of diamond coronagraphs”.

Supervisor of diploma workers

- Assistant supervisor for Johannes Enlund “ICP etching of single-crystal HTHP and CVD diamond”, Solid State Electronics, Uppsala University, 2003.

- Main supervisor for Herman Höglström “Fabrication of analogue microstructures in diamond”, Microsystem Technology, Uppsala University, 2002.

- Assistant supervisor for Axel Lundvall “Construction of an optical microrelief retroreflector”, Microsystem Technology, Uppsala University, 2002.

Entrepreneurial achievements

- 2009 – 2021, Chairman of the board, Molecular Fingerprint Sweden AB.

- 2003 – now, CEO, Adamantis AB (since 2010).

- Co-founder of Molecular Fingerprint Sweden AB, Uppsala, in 2009. The company developed a lab-on-a-chip platform for protein analysis. The company was closed down in 2021. Related patents now placed in Adamantis AB.

- Co-founder of Adamantis AB, Uppsala, in 2003. The company develops and fabricates diamond microstructures.