

Curriculum Vitae

--- October 2023 ---

Mikael Karlsson, Senior Lecturer, Associate Professor

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

2022 (November) –
Head of the Division of Applied Materials Science, The Ångström Laboratory, Uppsala University

2018 (August) –
Senior Lecturer (Universitetslektor) in Applied Material Science; specializing in Diamond Optics. Division of Applied Materials Science, The Ångström Laboratory, Uppsala University, Sweden

2010 –
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

Publications

Peer-reviewed original articles (international); h-index: 23

1. 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
Times cited: 0
2. 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
Times cited: 0
3. 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
Times cited: 0
4. 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
Times cited: 0

5. J. Llop-Sayson, J. J. Wang, J.-B. Ruffio, D. Mawet, S. Blunt, O. Absil, C. Bond, C. Brinkman, B. P. Bowler, M. Bottom, A. Chontos, P. A. Dalba, B. J. Fulton, S. Giacalone, M. Hill, L. A. Hirsch, A. W. Howard, H. Isaacson, M. Karlsson, J. Lubin, A. Madurowicz, K. Matthews, E. Morris, M. Perrin, B. Ren, M. Rice, L. J. Rosenthal, G. Ruane, R. Rubenzahl, H. Sun, N. Wallack, J. W. Xuan, and M. Ygouf, “Constraining the Orbit and Mass of epsilon Eridani b with Radial Velocities, Hipparcos IAD-*Gaia* DR2 Astrometry, and Multiepoch Vortex Coronagraphy Upper Limits” *Astronomical Journal* **162**:181, 1-19 (2021)
doi:10.3847/1538-3881/ac134a
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6. 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
Times cited: 26

7. A-L. Maire, E. Huby, O. Absil, G. Zins, M. Kasper, C. Delacroix, S. Leveratto, M. Karlsson, G. Ruane, H. U. Käufl, G. Orban de Xivry, P. Pathak, L. Pettazzi, P. Duhoux, J. Kolb, É. Pantin, A. J. Eldorado Riggs, R. Siebenmorgen, and D. Mawet, “Design, pointing control, and on-sky performance of the mid-infrared vortex coronagraph for the VLT/NEAR experiment,” *Journal of Astronomical Telescopes, Instruments, and Systems* **6**, 1-16 (2020)
doi:10.1117/1.JATIS.6.3.035003
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8. C. Dettenrieder, D. Türkmen, A. Mattsson, L. Österlund, M. Karlsson, and B. Mizaikoff, “Determination of Volatile Organic Compounds in Water by Attenuated Total Reflection Infrared Spectroscopy and Diamond-Like Carbon Coated Silicon Wafers,” *Chemosensors* **8**, 1-17 (2020)
doi:10.3390/chemosensors8030075
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9. 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 Catálan, 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
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10. D. Türkmen, C. Dettenrieder, P. Forsberg, A. Mattsson, F. Nikolajeff, L. Österlund, M. Karlsson, and B. Mizaikoff, "Corrosion Detection by Infrared Attenuated Total Reflection Spectroscopy via Diamond-Like Carbon-Coated Silicon Wafers and Iron-Sensitive Dyes," *Sensors* **19**, 1-8 (2019)
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Times cited: 4
11. A. Jolivet, G. Orban de Xivry, E. Huby, P. Piron, E. Vargas Catalan, S. Habraken, J. Surdej, M. Karlsson, and O. Absil, "L- and M-band annular groove phase mask in lab performance assessment on the vortex optical demonstrator for coronagraphic applications," *Journal of Astronomical Telescopes, Instruments, and Systems* **5**, 1-8 (2019)
doi:10.1117/1.JATIS.5.2.025001
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12. 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
Times cited: 15
13. 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
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14. J. Haas, E. Vargas Catalán, P. Piron, F. Nikolajeff, L. Österlund, M. Karlsson, and B. Mizaikoff, "Polycrystalline diamond thin-film waveguides for mid-infrared evanescent field sensors," *ACS Omega* **3**, 6190-6198 (2018)
doi:10.1021/acsomega.8b00623
Times cited: 9
15. 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
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16. M. Reggiani, V. Christiaens, O. Absil, D. Mawet, E. Huby, E. Choquet, C.A. Gomez Gonzalez, G. Ruane, B. Femenia, E. Serabyn, K. Matthews, M. Barraza, B. Carlomagno, D. Defrère, C. Delacroix, S. Habraken, A. Jolivet, M. Karlsson, G. Orban de Xivry, P. Piron, J. Surdej, E. Vargas Catalán, and O. Wertz, "Discovery of a point-like source and a third spiral arm in the transition disk around the Herbig Ae star MWC 758," *Astronomy & Astrophysics* **611**, A74, 1-10 (2018)
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17. L. Almandoz-Gil, H. Welander, E. Ihse, P. Emami Khoonsari, S. Musunuri, C. Lendel, J. Sigvardson, M. Karlsson, M. Ingelsson, K. Kultima, and J. Bergström, "Low molar excess of 4-oxo-2-nonenal and 4-hydroxy-2-nonenal promote oligomerization of alpha-synuclein through different pathways," *Free Radical Biology & Medicine* **110**, 421-431 (2017)
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18. C. A. Gomez Gonzalez, O. Wertz, O. Absil, C. Valentin, D. Defrère, D. Mawet, J. Milli, P-A. Absil, M. Van Droogenbroeck, F. Cantalloube, P. Hinz, A. Skemer, M. Karlsson, and J. Surdej, "VIP: Vortex Image Processing Package for High-contrast Direct Imaging," *The Astronomical Journal* **154**, 7, 1-12 (2017)
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19. 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)
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21. J. Milli, P. Hibon, V. Christiaens, É. Choquet, M. Bonnefoy, G. M. Kennedy, M. C. Wyatt, O. Absil, C. A. Gómez González, C. del Burgo, L. Matrà, J.-C. Augereau, A. Boccaletti, C. Delacroix, S. Ertel, W. R. F. Dent, P. Forsberg, T. Fusco J. H. Girard, S. Habraken, E. Huby, M. Karlsson, A.-M. Lagrange, D. Mawet, D. Mouillet, M. Perrin, C. Pinte, L. Pueyo, C. Reyes, R. Soummer, J. Surdej, Y. Tarricq, and Z. Wahhaj, "Discovery of a low-mass companion inside the debris ring surrounding the F5V star HD206893," *Astronomy & Astrophysics* **597**, L2, 1-6 (2017)
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23. C. Xia, Y. Cai, Y. Ma, B. Wang, W. Zhang, M. Karlsson, Y. Wu, and B. Zhu, "Natural Mineral-Based Solid Oxide Fuel Cell with Heterogeneous Nanocomposite Derived from Hematite and Rare-Earth Minerals," *ACS Applied Materials & Interfaces* **8**, 2074820755 (2016)
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24. A. Lopez-Lorente, P. Wang, M. Sieger, E. Vargas Catalán, M. Karlsson, F. Nikolajeff, L. Österlund, and B. Mizaikoff, "Mid-infrared thin-film diamond waveguides combined with tunable quantum cascade lasers for analyzing the secondary structure of proteins," *Physica Status Solidi (a) applications and materials science* **213**, 2117-2123 (2016)
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25. P. Forsberg, M. Malmström, E. Vargas Catalán, and M. Karlsson, "Diamond grating waveplates," *Optical Materials Express* **6**, 2024-2030 (2016)
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26. Y. Cai, H. Li, M. Karlsson, K. Leifer, H. Engqvist, and W. Xia, "Biom mineralization on Single Crystalline Rutile: The Modulated Growth of Hydroxyapatite by Fibronectin in a Simulated Body Fluid," *RSC Advances* **6**, 35507-35516 (2016)
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27. 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)
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28. M. Malmström, M. Karlsson, P. Forsberg, Y. Cai, F. Nikolajeff and F. Laurell, "Waveguides in polycrystalline diamond for mid-IR sensing," *Optical Materials Express* **6**, 1286-1295 (2016)
doi:10.1364/OME.6.001286
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29. Y. Cai, F. Edin, Z. Jin, A. Alexsson, O. Gudjonsson, W. Liu, H. Rask-Andersen, M. Karlsson and H. Li, "Strategy towards independent electrical stimulation from cochlear implants: Guided auditory neuron growth on topographically modified nanocrystalline diamond," *Acta Biomaterialia* **31**, 211-220 (2016)
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30. E. Vargas Catalán, P. Forsberg, O. Absil and M. Karlsson, "Controlling the profile of high aspect ratio gratings in diamond," *Diamond & Related Materials* **63**, 60-68 (2016)
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31. Y. Cai, C. Lendel, L. Österlund, L. Lannfelt, M. Ingelsson, F. Nikolajeff, M. Karlsson and J. Bergström, "Changes in secondary structure of α -synuclein during oligomerization induced by reactive aldehydes," *Biochemical and Biophysical Research Communications* **464**, 336-341 (2015)
doi:10.1016/j.bbrc.2015.06.154
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32. 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
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33. T. Fagerqvist, T. Nasstrom, E. Ihse, V. Lindstrom, C. Sahlin, S.M.F. Tucker, A. Kasaryan, M. Karlsson, F. Nikolajeff, H. Schell, T.F. Outeiro, P.J. Kahle, L. Lannfelt, M. Ingelsson and J. Bergstrom, "Off-pathway alpha-synuclein oligomers seem to alter alpha-synuclein turnover in a cell model but lack seeding capability in vivo," *Amyloid-Journal of Protein Folding Disorders* **20**, 233-244 (2013)
doi:10.3109/13506129.2013.835726
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36. P. Forsberg and M. Karlsson, "High aspect ratio optical gratings in diamond," *Diamond & Related Materials* **34**, 19-24 (2013)
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37. P. Forsberg and M. Karlsson, "Inclined surfaces in diamond: broadband antireflective structures and coupling light through waveguides," *Optics Express* **21**, 2693-2700 (2013)
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39. K. Fromell, P. Forsberg, M. Karlsson, K. Larsson, F. Nikolajeff and L. Baltzer, "Designed protein binders in combination with nanocrystalline diamond for use in high- sensitivity biosensors," *Analytical & Bioanalytical Chemistry* **404**, 1643-1651 (2012)
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Invited talks

- 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

- 2023-07-17 – 2023-07-21 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, “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)

Scientific conferences

- S. Ronayette, S. Mouzali, J-C. Barrière, É. Pantin, T. Orduna, P. Gallais, M. Lortholary, L. Dumaye, O. Absil, C. Delacroix, D. Ives and M. Karlsson, “An N-band test bench for the METIS coronagraphic masks,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **11447**, SPIE ASTRONOMICAL TELESCOPES + INSTRUMENTATION (December 14-18, 2020, Online Only, California, USA)
- L. König, O. Absil, C. Delacroix, M. Lobet, M. Karlsson, E. Vargas Catalan, G. Orban de Xivry, J. Loicq, and S. Habraken, “Vortex Phase Masks of Topological Charge 4 and higher with Diamond Subwavelength Gratings,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **11451**, SPIE ASTRONOMICAL TELESCOPES + INSTRUMENTATION (December 14-18, 2020, Online Only, California, USA)
- P. Forsberg, M. Hamberg and M. Karlsson, “Diamond gratings for dielectric laser acceleration” Optics & Photonics in Sweden 2019 (October 16-17, 2019, Stockholm, Sweden)
- H.U. Kaeufl, M. Kasper, R. Arsenaut, G. Jakob, S. Leveratto, G. Zins, E. Fuenteseca, M. R. Siebenmorgen, M. Sterzik, N. Ageorges, S. Gutruf, D. Kampf, A. Reutlinger, O. Absil, B. Carlomagno, O. Guyon, P. Klupar, D. Mawet, G. Ruane, M. Karlsson, E. Pantin and K. Dohlen, “NEAR: New Earths in the Alpha Cen Region (bringing VISIR as a "visiting instrument" to ESO-VLT-UT4),” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **10702**, Conference on Ground-Based and Airborne Instrumentation for Astronomy VII (June 10-14, 2018, Austin, TX, USA)
- M.A. Kenworthy, F. Snik, C.U. Keller, D. Doelman, E.H. Por, O. Absil, B. Carlomagno, M. Karlsson, E. Huby, A.M. Glauser, S.P. Quanz, Sascha and W.D. Taylor, “High contrast imaging for the enhanced resolution imager and spectrometer (ERIS),” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **10702**, Conference on Ground-Based and Airborne Instrumentation for Astronomy VII (June 10-14, 2018, Austin, TX, USA)
- J. Haas, P. Piron, E. Vargas Catalan, M. Karlsson, L. Österlund, F. Nikolajeff and B. Mizaikoff, “Sensing Glucose in Human Saliva with Mid-Infrared Broadly Tunable Quantum Cascade Lasers and Polycrystalline Diamond Waveguides,” EUROPT(R)ODE XIV Naples 2018, CONFERENCE ON OPTICAL CHEMICAL SENSORS AND BIOSENSORS (March 25-28, 2018, Naples, Italy)
- P. Piron, J. Haas, E. Vargas Catalan, F. Nikolajeff, L. Österlund, P.O. Andersson, J. Bergström, B. Mizaikoff and M. Karlsson, “Development of a diamond waveguide sensor for sensitive protein analysis using IR quantum cascade lasers,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **10539**, Photonics West 2018, Photonic Instrumentation Engineering V (January 27-February 1, 2018, San Francisco, CA, USA)
- P. Piron, E. Vargas Catalan and M. Karlsson, “Polarization analysis of space-variant birefringent plates based on subwavelength gratings,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **10539**, Photonics West 2018, Photonic Instrumentation Engineering V (January 27-February 1, 2018, San Francisco, CA, USA)

- M. Karlsson, F. Nikolajeff, L. Österlund, P.O. Andersson, P. Piron, E. Vargas Catalan and J. Bergström, “Protein analysis by label free evanescent mid-IR diamond waveguide spectroscopy,” 2017 MRS Fall Meeting & Exhibit (November 26-December 1, 2017, Boston, USA)
- M. Karlsson, E. Vargas Catálan, P. Piron, E. Huby, B. Carlomagno, A. Jolivet, O. Absil, P. Baudoz, I. Vartiainen, M. Kuittinen and D. Mawet, “Diamond coronagraphs for direct detection of extrasolar planets,” EOS Topical Meeting on Diffractive Optics 2017, DO2017 (September 4-7, 2017, Joensuu, Finland)
- M. Hamberg, E. Vargas Catalan, M. Karlsson, D. Dancila, A. Rydberg, Anders, J. Ögren, M. Jacewicz, M. Kuittinen and I. Vartiainen, “Dielectric Laser Acceleration Setup Design, Grating Manufacturing and Investigations Into Laser Induced RF Cavity Breakdowns,” 38th International Free-Electron Laser Conference (August 20-25, 2017, Santa Fe, USA)
- E. Vargas Catalán, P. Forsberg, E. Huby, B. Carlomagno, A. Jolivet, O. Absil, P. Baudoz, I. Vartiainen, M. Kuittinen and M. Karlsson, “Realizing diamond subwavelength gratings working in the near infrared wavelength region,” The International New Diamond and Nano Carbons Conference – NDNC 2017 (May 28-June 1, 2017, Cairns, Australia)
- M. Hamberg, E. Vargas Catalan, M. Karlsson, J. Ögren and M. Jacewicz, “Dielectric laser accelerator investigation, setup substrate manufacturing and investigation of effects of laser induced electromigration rf cavity breakdown influences,” The 8th International Particle Accelerator Conference IPAC 2017 (May 14-19, 2017, Copenhagen, Denmark)
- P. Piron, E. Vargas Catalan and M. Karlsson, “Polarization analysis of a space-variant birefringent plate made of diamond subwavelength gratings,” Hasselt Diamond Workshop – 2017 SBDD XXII (March 8-10, 2017, Hasselt, Belgium).
- E. Vargas Catalan and M. Karlsson, “Reducing the feature size of diamond subwavelength gratings,” Hasselt Diamond Workshop – 2017 SBDD XXII (March 8-10, 2017, Hasselt, Belgium).
- O. Absil, D. Mawet, M. Karlsson, B. Carlomagno, V. Christiaens, D. Defrère, C. Delacroix, B. F. Castellá, P. Forsberg, J. Girard, C. A. Gómez González, S. Habraken, P. M. Hinz, E. Huby, A. Jolivet, K. Matthews, J. Milli, G. Orban de Xivry, E. Pantin, P. Piron, M. Reggiani, G. J. Ruane, E. Serabyn, J. Surdej, K. R. W. Tristram, E. Vargas Catalan, O. Wertz, and Peter Wizinowich, “Three years of harvest with the vector vortex coronagraph in the thermal infrared,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE) 9909*, SPIE Astronomical Telescopes + Instrumentation 2016, Ground-based and Airborne Instrumentation for Astronomy VI (June 26-July 1, 2016, Edinburgh, United Kingdom)
- B. Femenia Castella, E. Serabyn, D. Mawet, O. Absil, P. Wizinowich, K. Matthews, E. Huby, M. Bottom, R. Campbell, D. Chan, B. Carlomagno, S. Cetre, D. Defrere, C. Delacroix, C. Gomez Gonzalez, A. Jolivet, M. Karlsson, K. Lanclos, S. Lilley, S. Milner, H. Ngo, M. Reggiani, J. Simmons, H. Tran, E. Vargas Catalan, and O. Wertz, “Commissioning and first light results of an L'-band vortex coronagraph with the Keck II adaptive optics NIRC2 science instrument,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE) 9909*, SPIE Astronomical Telescopes + Instrumentation 2016, Adaptive Optics Systems V (June 26-July 1, 2016, Edinburgh, United Kingdom)

- B. Carlomagno, O. Absil, M. Kenworthy, G. Ruane, C. U. Keller, G. Otten, M. Feldt, S. Hippler, E. Huby, D. Mawet, C. Delacroix, J. Surdej, S. Habraken, P. Forsberg, M. Karlsson, E. Vargas Catalan, and B. R. Brandl, “End-to-end simulations of the E-ELT/METIS coronagraphs,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9909**, SPIE Astronomical Telescopes + Instrumentation 2016, Adaptive Optics Systems V (June 26-July 1, 2016, Edinburgh, United Kingdom)
- B. Carlomagno, O. Absil, G. Ruane, D. Mawet, M. Feldt, S. Hippler, C. Delacroix, P. Forsberg, S. Habraken, E. Huby, M. Karlsson, J. Surdej, and E. Vargas Catalan, “Performance evaluation of mid-IR vortex coronagraphs with centrally obscured segmented pupils,” In AO4ELT4 International Conference (October 25-30, 2015, Lake Arrowhead, USA)
- A. López-Lorente, P. Wang, X. Wang, M. Sieger, M. Karlsson, P. Forsberg, F. Nikolajeff, L. Österlund, and B. Mizaikoff, “Mid-infrared chem/bio sensors based on thin-film diamond wave-guides combined with quantum cascade lasers,” Euroanalysis XVIII (September 6-10, 2015, Bordeaux, France)
- O. Absil, D. Mawet, M. Karlsson, S. Habraken, J. Surdej, P-A. Absil, B. Carlomagno, V. Christiaens, D. Defrère, P. Forsberg, J. Girard, C. Gomez Gonzalez, P. Hinz, E. Huby, A. Jolivet, J. Milli, E. Pantin, G. Ruane, E. Serabyn, M. Van Droogenbroeck, E. Vargas Catalan, and O. Wertz, “An update on the VORTEX project,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9605**, SPIE Optics + Photonics: Techniques and Instrumentation for Detection of Exoplanets VII (August 13-15, 2015, San Diego, USA)
- C. Delacroix, P. Forsberg, P. Piron, G. Ruane, E. Huby, B. Carlomagno, A. Jolivet, E. Vargas Catalan, O. Absil, D. Mawet, M. Karlsson, J. Surdej and S. Habraken, “A family of subwavelength grating vortex coronagraphs (SGVCs) with higher topological charge,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9605**, SPIE Optics + Photonics: Techniques and Instrumentation for Detection of Exoplanets VII (August 13-15, 2015, San Diego, USA)
- B. Carlomagno, C. Delacroix, E. Huby, O. Absil, D. Mawet, A. Jolivet, M. Karlsson, P. Forsberg, E. Vargas Catalan, S. Habraken and J. Surdej, “Design and performance simulations of mid-IR AGPMs for ELT/METIS applications,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9605**, SPIE Optics + Photonics: Techniques and Instrumentation for Detection of Exoplanets VII (August 13-15, 2015, San Diego, USA)
- P. Piron, C. Delacroix, E. Huby, D. Mawet, M. Karlsson, G. Ruane, S. Habraken, O. Absil and J. Surdej, “A Mach-Zehnder interferometer based on orbital angular momentum for improved vortex coronagraph efficiency,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9605**, SPIE Optics + Photonics: Techniques and Instrumentation for Detection of Exoplanets VII (August 13-15, 2015, San Diego, USA)
- E. Huby, O. Absil, E. Serabyn, P. Baudoz, C. Delacroix, A. Jolivet, P. Piron, E. Vargas Catalan, P. Forsberg, M. Karlsson, B. Carlomagno, G. Ruane, S. Habraken, C. Gomez Gonzales, O. Wertz, J. Surdej, P-A. Absil, V. Christiaens, D. Defrère, J. Girard, P. Hinz, J. Milli, E. Pantin and M. Van Droogenbroeck, “The vortex coronagraph: from laboratory characterization to on-sky operation,” In the spirit of Bernard Lyot 2015 (June 22-26, 2015, Montréal, Canada)

- M. Malmström, P. Forsberg, Y. Cai, M. Karlsson, F. Nikolajeff and F. Laurell, “Diamond waveguides for mid-IR chemical sensing,” CLEO 2015 – The Conference on Lasers and Electro-Optics/Europe (June 21-25, 2015, Munich, Germany)
- E. V. Catalan, P. Forsberg and M. Karlsson, “High aspect ratio sub-wavelength gratings in diamond,” New Diamond and Nano Carbons 2015 (May 24-28, 2015, Shizuoka, Japan)
- M. Malmström, M. Karlsson, P. Forsberg, F. Nikolajeff and F. Laurell, “Diamond waveguides for mid-IR sensing,” Optics and Photonics in Sweden (November 11-12, 2014, Gothenburg, Sweden)
- P. Forsberg, E. Vargas Catalan, C. Delacroix, O. Absil, B. Carlomagno, D. Mawet, S. Habraken, J. Surdej, and M. Karlsson, “Realizing the diamond annular groove phase masks for the mid infrared region: five years of successful process development of diamond plasma etching,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9151**, SPIE Astronomical Telescopes and Instrumentation 2014, Advances in Optical and Mechanical Technologies for Telescopes and Instrumentation (June 22-28, 2014, Montreal, Canada)
- O. Absil, D. Mawet, C. Delacroix, P. Forsberg, M. Karlsson, S. Habraken, J. Surdej, P.A Absil, B. Carlomagno, C. Valentin, D. Defrère, C. Gómez González, E. Huby, A. Jolivet, J. Julien, P. Piron, E. Vargas Catalan and M. Van Droogenbroeck, “The VORTEX project: first results and perspectives,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9148**, SPIE Astronomical Telescopes and Instrumentation 2014, Adaptive Optics Systems IV (June 22-28, 2014, Montreal, Canada)
- B. Carlomagno, C. Delacroix, O. Absil, P. Forsberg, S. Habraken, A. Jolivet, M. Karlsson, D. Mawet, P. Piron, J. Surdej and E. Vargas Catalan, “Mid-IR AGPMs for ELT applications,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9147**, SPIE Astronomical Telescopes and Instrumentation 2014, Ground-based and Airborne Instrumentation for Astronomy V (June 22-28, 2014, Montreal, Canada)
- C. Delacroix, O. Absil, B. Carlomagno, P. Piron, P. Forsberg, M. Karlsson, D. Mawet, S. Habraken, and J. Surdej, “Development of a subwavelength grating vortex coronagraph of topological charge 4 (SGVC4),” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9147**, SPIE Astronomical Telescopes and Instrumentation 2014, Ground-based and Airborne Instrumentation for Astronomy V (June 22-28, 2014, Montreal, Canada)
- D. Defrère, O. Absil, P. Hinz, J. Kuhn, D. Mawet, B. Mennesson, A. Skemer, K. Wallace, V. Bailey, E. Downey, C. Delacroix, O. Durney, P. Forsberg, C. Gomez, S. Habraken, W.F. Hoffmann, M. Karlsson, M. Kenworthy, J. Leisenring, M. Montoya, L. Pueyo, M. Skrutskie and J. Surdej, “L'-band AGPM vector vortex coronagraph's first light on LBT/LMIRCam,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **9148**, SPIE Astronomical Telescopes and Instrumentation 2014, Adaptive Optics Systems IV (June 22-28, 2014, Montreal, Canada)
- M. Karlsson, P. Forsberg, E. Catalan, O. Absil, D. Mawet, C. Delacroix, B. Carlomagno, S. Habraken and J. Surdej, “Diamond Optics for Direct Imaging of Extrasolar Planets,” The International New Diamond and Nano Carbons Conference – NDNC 2014 (May 25-29, 2014, Chicago, IL, USA)

- D. Defrère, O. Absil, P. Hinz, J. Kuhn, D. Mawet, B. Mennesson, A. Skemer, K. Wallace, V. Bailey, E. Downey, C. Delacroix, O. Durney, P. Forsberg, C. Gomez, S. Habraken, M. Karlsson, M. Kenworthy, M. Montoya, L. Pueyo, M. Skrutskie and J. Surdej, “L'-band AGPM vector vortex coronagraph's first light on LBTI/LMIRCAM,” Search for Life Beyond the Solar System. Exoplanets, Biosignatures & Instruments (March 16-21, 2014, Tucson, AZ, USA)
- Y. Cai, L. Almandoz, M. Karlsson, F. Nikolajeff, L. Österlund and J. Bergström, “ATR-FTIR spectroscopy study of oxidative modification of the α -synuclein secondary structure,” Optics & Photonics in Sweden (October 22-23, 2013, Uppsala, Sweden)
- D. Mawet, O. Absil, J. Milli, C. Delacroix, J. H. Girard, J. O'Neal, 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. Pena, R. Olivier, N. Slusarenko, L. E. Tacconi-Garman and J. Surdej, “Small-angle, high-contrast exoplanet imaging with the L-band AGPM vector vortex coronagraph now offered at the VLT,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **8864**, Techniques and Instrumentation for Detection of Exoplanets VI (August 26-29, 2013, San Diego, CA, USA)
- D. Mawet, O. Absil, J. Milli, P. Baudoz, A. Boccaletti, G. Chauvin, C. Delacroix, J. H. Girard, A. M. Lagrange, J. O'Neal, P. Bourget, 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, “Companion search around β Pictoris with the newly commissioned L'-band vector vortex coronagraph on VLT/NACO,” *Proceedings of the International Astronomical Union* **229** (June 2-7, 2013, Victoria, Canada)
- C. Delacroix, O. Absil, D. Mawet, C. Hanot, M. Karlsson, P. Forsberg, E. Pantin, J. Surdej and S. Habraken, “A diamond AGPM coronagraph for VISIR,” *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **8446**, Ground-based and Airborne Instrumentation for Astronomy IV (July 1-6, 2012, Amsterdam, Netherlands)
- P. Forsberg, C. Delacroix, D. Mawet, O. Absil, C. Hanot, S. Habraken, J. Surdej and M. Karlsson, “Etching High Aspect Ratio Optical Gratings in Diamond,” The International New Diamond and Nano Carbons Conference – NDNC 2012 (May 20-24, 2012, San Juan, Puerto Rico)
- C. Delacroix, S. Habraken, M. Karlsson, O. Absil, C. Hanot, J. Surdej, and D. Mawet, “Development of diamond AGPM coronagraphs for VISIR and NACO,” Belgian (exo)-planet meeting (March 22, 2012, Leuven, Belgium)
- P. Forsberg, C. Delacroix, D. Mawet, O. Absil, C. Hanot, S. Habraken, J. Surdej and M. Karlsson, “Fabricating an annular groove phase mask in diamond,” Hasselt Diamond Workshop – 2012 SBDD XVII (March 14-16, 2012, Hasselt, Belgium)
- C. Delacroix, S. Habraken, M. Karlsson, F. Nikolajeff and P. Forsberg, “Diamond subwavelength gratings for mid-infrared diamond AGPM coronagraph: manufacturing assessment,” European Optical Society Annual Meeting – EOSAM 2010 (October 26-29, 2010, Paris, France)

- C. Delacroix, P. Forsberg, M. Karlsson, D. Mawet, C. Lenaerts, S. Habraken, O. Absil, C. Hanot, and J. Surdej, "First manufactured diamond AGPM vector vortex for the L- and N-bands: metrology and expected performances," In the Spirit of Lyot 2010 (October 25-29, 2010, Paris, France)
- P. Forsberg, F. Nikolajeff and M. Karlsson, "Wettability control and superhydrophobicity on diamond," MSW 2010 - Micronano System Workshop (May 4-5, 2010, Stockholm, Sweden)
- T. Näsström, T. Wahlberg, M. Barbu, V. Silva, M. Karlsson, F. Nikolajeff, L. Lannfelt, M. Ingelsson and J. Bergström, "Morphological and functional differences of aldehyde-induced alpha-synuclein oligomers," *Amyloid - Journal of Protein Folding Disorders* **17**, 12th International Symposium on Amyloidosis from Molecular Mechanisms Toward the Cure of Systemic Amyloidoses (April 18-21, 2010, Rome, Italy)
- N. Darwish, M. Moreno, M. Karlsson, P. Forsberg, J. Samitier and F. Nikolajeff, "Surface plasmon resonance using nanocrystalline diamond substrates," 3rd IBEC Symposium on Bioengineering and Nanomedicine (June 1-2, 2010, Barcelona, Spain)
- P. Björnängen, M. Ekberg, T. Öström, H. Fosshaug, J. Karlsson, C. Björnberg, F. Nikolajeff, M. Karlsson, "DOE manufacture with the DUV SLM-based Sigma7300 laser pattern generator," *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **5377**, Conference on Optical and Microlithography XVII (February 24-27, 2004, Santa Clara, CA, USA)
- F. Nikolajeff and M. Karlsson, "Diamond micro-optics," *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **5183**, Conference on Lithographic and Micromachining Techniques for Optical Component Fabrication II (August 3-4, 2003, San Diego, CA, USA)
- M. Karlsson and F. Nikolajeff, "Diamond Micro-Optics for High-Power Lasers," ICALEO 2002, 21st International Congress on Applications of Lasers & Electro-Optics, Laser Institute of America (October 14-17, 2002, Phoenix, AZ, USA)
- M. Karlsson, F. Nikolajeff and K. Hjort, "Diamond Microoptics," Diamond 2002, 13th European Conference on Diamond, Diamond-Like Materials, Carbon Nanotubes, Nitrides & Silicon Carbide, Elsevier Science (September 8-13, 2002, Granada, Spain)
- M. Karlsson and F. Nikolajeff, "Fabrication of refractive and diffractive micro-optical structures in diamond," *OSA Trends in Optics and Photonics* **75**, Opt. Soc. America, Washington, DC, USA. 6th Topical Meeting on Diffractive Optics and Micro-Optics (June 3-6, 2002, Tucson, AZ, USA)
- M. Karlsson, F. Nikolajeff, H. Martinsson and A. Larsson, "Monolithic integration of continuous-relief diffractive structures with vertical-cavity surface-emitting lasers," IEEE 18th International Semiconductor Laser Conference. Conference Digest, IEEE, Piscataway, NJ, USA (September 29-October 3, 2002, Garmisch-Partenkirchen, Germany)
- M. Karlsson and F. Nikolajeff, "Diamond micro-optics," IEEE/LEOS International Conference on Optical MEMS (August 20-23, 2002, Lugano, Switzerland)

- M. Karlsson and F. Nikolajeff, "Integration of micro-optics with semiconductor lasers," 4th Micro Structure Workshop (20-21 March, 2002, Bålsta, Sweden)
- M. Karlsson and F. Nikolajeff, "Transfer of diffractive structures into GaAs and diamond," EOS Topical Meeting on Diffractive Optics 2001, European Optical Society (October 9-11 2001, Budapest, Hungary)
- M. Karlsson and F. Nikolajeff, "Transfer of micro-optical structures into GaAs and diamond," *Proceedings of the society of photo-optical instrumentation engineers (SPIE)* **4561**, Conference on MOEMS and Miniaturized Systems II (October 22-24, 2001, San Francisco, CA, USA)
- M. Karlsson and F. Nikolajeff, "Transfer of diffractive structures into GaAs and diamond," Optics in Sweden 2001, Swedish Optical Society (November 7-8, 2001, Stockholm, Sweden)
- M. Karlsson, F. Nikolajeff, H. Martinsson and A. Larsson, "Transfer of diffractive optical elements into GaAs by use of inductively coupled plasma etching for integration with vertical-cavity surface-emitting lasers," Trends in Optics and Photonics. Diffractive Optics and Micro-Optics. Vol.41. Technical Digest. Postconference Edition, Opt. Soc. America, Washington, DC, USA 120-2 (June 18-22, 2000, Québec, Canada)
- M. Karlsson, F. Nikolajeff, H. Martinsson and A. Larsson, "Transfer of micro-optical structures into semiconductor materials by use of inductively coupled plasma dry etching," Northern Optics 2000 and EOSAM 2000, Swedish Optical Society (June 6-8, 2000, Uppsala, Sweden)
- D. Pasquariello, M. Karlsson, S. Greek, C. Hedlund, R. Gupta and K. Hjort, "InP based Micro Opto Electro Mechanics," 3rd Micro Structure Workshop, 201-212 (March 24-25, 1998, Uppsala, Sweden)

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

- 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

- 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 editorial board *Chemosensors*, November 2020 –
- 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: Azizahhakim 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 evanescence wave spectroscopy,” granted in Sweden, France, Germany, Great Britain, Switzerland and USA.

Teaching

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

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

- 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 –

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

- 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 –

- 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 –

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

- 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.

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

- Subject examiner for diploma work in Engineering Physics, MSc programme, Uppsala University: 1. Jonas Ferm “Family development: ^[1]_{SEP} 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).

- 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.

Pedagogical education

- Lead and Grow in Academia (1 week), 2020. Given by Division for Quality Enhancement; Career and Leadership in Academia, Uppsala University.

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

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

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

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

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

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

- Presentation techniques (4 weeks, 6 hp), 1998. Given by 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. Fuenteseca, 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. Käufel, 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), "Diffraction optical elements in diamond" June 2003 (written by M. Karlsson and F. Nikolajeff)

Supervisor of postdoctoral researchers and mentorship

- 2018-03-12 – , 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

- 2019-10-07 – 2023-10-12, Assistant supervisor for MSc Lorenzo König “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 Högström “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 – , 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.