

Curriculum Vitae

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Prof.dr. Albert Polman

Scientific Group Leader

Program Leader, NWO Focus Group Light Management in New Photovoltaic Materials

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Personal details

Date of birth: April 21, 1961

Place of birth: Groningen, The Netherlands

Nationality: Dutch

Scientific education

1989 PhD Thesis: *Beam-induced phase transformations in silicon* (Utrecht University, The Netherlands), advisors: F.W. Saris and W.C. Sinke

1985 MSc Physics, Utrecht University (The Netherlands)

1981 BSc Physics, Utrecht University (The Netherlands)

Albert Polman is one of the early pioneers of the research area of nanophotonics, the study of light at the nanoscale. His research group focuses on the realization of nanoscale metamaterials with tailored optical properties that do not exist in nature. He designs and fabricates novel photovoltaic architectures with enhanced power conversion efficiency based on semiconductor and dielectric metasurfaces and optical metasurfaces that perform analog optical computing tasks. Polman's group developed angle-resolved cathodoluminescence microscopy, a novel super-resolution microscopy technique that creates images with 10 nanometer resolution. The instrument is brought on the market by the start-up Delmic BV that Polman co-founded.

Past positions

2017-2018 Visiting Research Fellow, University of New South Wales, Sydney (sabbatical leave)

2006-2013 Director, FOM Institute AMOLF

2005 Head, Center for Nanophotonics, FOM Institute AMOLF

2003-2004 Visiting associate, California Institute of Technology, USA (sabbatical leave)

1999-2004 Department Head, FOM Institute AMOLF

1996-2011 Professor of Nanophotonics, University of Utrecht

1996-present Tenured scientific group leader, FOM Institute AMOLF

1991-1996 Scientific project leader, FOM Institute AMOLF

1989-1991 Post-doctoral staff researcher, AT&T Bell Laboratories (Murray Hill, NJ, USA)

1985-1989 PhD researcher, FOM Institute AMOLF

Distinctions and awards

2023 Member, Netherlands Academy of Engineering (NAE)

2021 ERC Advanced Investigator Grant

2019 Highly Cited Researcher (Web of Science, Clarivate Analytics)

2018 Highly Cited Researcher (Web of Science, Clarivate Analytics)

2017 Frew Fellow, Australian Academy of Sciences

2017 Highly Cited Researcher (Web of Science, Clarivate Analytics)

2017 Research into the Science of Light Prize, European Physical Society (EPS)

2016 ERC Advanced Investigator Grant

2016 Fellow, Optical Society of America (OSA)

2014 Physica Prize, Netherlands Physical Society (NNV)

2014 Innovation in Materials Characterization Award, Materials Research Society (MRS)

2014 Julius Springer Prize for Applied Physics

2012 ENI Renewable and Non-Conventional Energy Prize

2011 ERC Advanced Investigator Grant

2010 Fellow, Materials Research Society (MRS, USA)

2009 Member, Royal Netherlands Academy of Arts and Sciences (KNAW)

- 2008 Honorary Member, International Committee Ion Beam Modification of Materials (IBMM) conference
 2007 Member, Royal Holland Society of Sciences and Humanities (Koninklijke Hollandsche Maatschappij der Wetenschappen)

Awards for group members:

- 2023 Rubicon Award NWO (A. Cordaro)
 2022 Rising Stars of Light Award (A. Cordaro)
 2022 *Cum laude* PhD Award (A. Cordaro)
 2021 *Cum laude* PhD award (M. Solà Garcia)
 2020 Premio Brovotto, Italian Physical Society (A. Cordaro)
 2018 Business Angel Award (V. Neder)
 2016 Rubicon Award NWO (J. van de Groep)
 2015 *Cum laude* PhD award (J. van de Groep)
 2014 Best PhD thesis in solar energy in The Netherlands (M.C. van Lare)
 2012 FOM prize for best PhD thesis application chapter (E.J.R. Vesseur)
 2012 MRS graduate student Gold Award (J. van de Groep)
 2011 Shell award for the best master thesis in physics (J. van de Groep)
 2009 *Cum laude* PhD award (E. Verhagen)
 2010 FOM prize for best PhD thesis (E. Verhagen)
 2010 FOM prize for best PhD thesis application chapter (E. Verhagen)
 1996 *Cum laude* PhD award (G.N. van den Hoven)

Publications and presentations

>350 publications in refereed international journals; nearly 40.000 citations (ISI); H-index: 97 (ISI); >200 invited presentations at international conferences, of which many as plenary or keynote speaker.

PhDs, postdocs, undergraduate students supervised

Total supervised: 26 PhD students, 18 postdocs, 35 master's students.

Memberships/program directorships

- 2023 Chair, Executive Board National Growth Fund program "Circular, integrated high-efficiency solar panels" (898 M€ research, innovation and industrial development program, 312 M€ subsidy)
 2023 Chair, International Evaluation Panel, Faculty of Science and Engineering, Groningen University
 2022-present Member, Mission Innovation team Renewable Energy, Ministry EZK
 2020-present Chair, Management Team EU Pathfinder consortium EBEAM
 2019-present Member, Platform Materialen
 2017-present Chair, Steering Committee National SOLARLab initiative
 2012-present Chair, Stichting ter bevordering van de Atoom- en de Molecuulfysica
 2014-2023 Chair, NWO Theme Committee Materials Science
 2014-2023 Chair, National Science Agenda (NWA) Materials Route
 2018-2023 Member, Strategic Advisory Board TNO Energy Transition
 2022 Jury, Rising Stars of Light Award, faculty track, Light Science Appl. journal
 2020-2021 Chair, steering committee "Duurzame MaterialenNL" National Growth Fund application consortium (total funding awarded for programs on circular plastics, batteries, sustainable steel 640 M€).
 2014-2020 Chair, Member, Royal Netherlands Academy of Arts and Sciences (KNAW) section TNW new member selection committee
 2016-2019 Member, International Advisory Board, Winton Renewable Energy Program, Cambridge University
 2018 Member, Jury EPS Research into the science of light prize
 2014-2018 Chair, Awards committee, Materials Research Society (MRS)
 2010-2018 Member, Executive Board National Nano-initiative NanoNextNL (125 M€ national program)
 2004-2017 Member, Program Committee Joint Solar Panel Industrial Partnership Program
 2016 Chair, International Evaluation Panel, Faculty of Applied Physics, Delft University of Technology
 2010-2016 Member, Young Energy Scientists Advisory Board of FOM
 2015-2016 Member, Scientific Advisory Council Advanced Research Center for Nanolithography
 2014-2015 Member, Program Committee, NanoCity National nanoscience and technology conference
 2014-2015 Member, FOM Committee Evaluation Industrial Partnership Programs
 2013-2014 Member, KNAW committee National policy for use of intellectual property
 2008-2012 Member, Steering Committee Physics@FOM Veldhoven, yearly national physics conference
 2004-2013 Member, Steering Committee FOM-Philips IPP Program *Improved solid state light sources*

2002-2010	Program director, Flagship <i>Nanophotonics</i> , Dutch Nanotechnology Program NANONED
2005-2008	Chair/Member, Nanophysics and Technology Advisory Board of FOM
1999-2008	Program director, National FOM research program <i>Photon physics in optical materials</i>
1998-2008	Secretary/Member, International Committee, Ion Beam Modification of Materials conference
2004-2005	Member, Board of Directors, Materials Research Society (Pittsburgh)

Journal editorships

2014-present	Member, Editorial Advisory Board ACS Photonics (American Chemical Society)
2007-present	Member, Editorial Advisory Board Nano Letters (American Chemical Society)
2014-2019	Member, Board of Reviewing Editors, Science (AAAS)
2012-2019	Member, Editorial Advisory Board Advanced Optical Materials (Wiley)
2014-2018	Member, Editorial Advisory Board Applied Physics Reviews (American Physical Society)
2000-2006	Member, Advisory Editorial Board of Physica B (Elsevier)
2000	Volume Organizer (co-editor), MRS Bulletin

Industrial collaborations/contracts

Polman is cofounder, shareholder and advisor of the start-up company Delmic BV founded in 2012.

2023-present	ASML: cathodoluminescence tomography for semiconductor metrology
2022-present	WiTec, SCIL Imprint Solutions: analog optical computing metasurfaces
2022-present	HyET Solar, VDL-ETG, SALDnano, Delmic, Roland Berger: development of roll-to-roll fabricated perovskite tandem solar cells using environmentally friendly processes.
2022-present	BASF, Shell, Exxon Mobil, Toyota, Delmic, DENSSolutions: development of sustainable chemical reactions using light-driven processes
2005-present	ThermoFisher/FEI: development of time-resolved cathodoluminescence microscopy
2012-present	Delmic: development of angle- and time-resolved cathodoluminescence microscopy
2005-present	Philips Research/SCIL Nanoimprint Solutions: development and application of large-area soft nano-imprint lithography
2005-2022	Philips Research: development of nanophotonic concepts for improved solid-state light sources
2017-2023	Shell, Exasun, Eternal Sun, Levitech and Tempres Systems: development of Si-based tandem solar cells
2017	Consultant, Lucros Investment
2013	ASML: development of a roadmap for nanolithography for photovoltaics
2005-2010	FEI Company: IPP program on focused ion beam nanofabrication; cathodoluminescence microscopy
1999-2001	Symmorphix: development and commercialization of erbium-doped planar optical amplifiers
1996-2000	AKZO-Nobel: development of polymer optical amplifiers
1995-2002	ST Microelectronics: development of silicon-based light sources
1991-1994	PTT/KPN: optical doping, development of planar optical amplifiers
1989-1991	AT&T Bell Laboratories: optical doping, integrated optics

Conference Organisation

2019	Co-chair, Workshop <i>Electron beam spectroscopy for nanophotonics</i> (Paris)
2017	Co-chair, Workshop <i>Electron beam spectroscopy for nanophotonics</i> (Barcelona)
2017	Co-chair, Summer School Nanophotonics, Amsterdam
2014	Co-chair, Workshop <i>Electron beam spectroscopy for nanophotonics</i> (Amsterdam)
2012	Co-chair, Symposium <i>Optical nanostructures and advanced materials for photovoltaics</i> (OSA, Eindhoven)
2006	Chair, First Gordon Research Conference <i>Plasmonics - optics at the nanoscale</i> (Keene, NH, USA)
2004	Co-organizer, Symposium <i>Nanophotonic materials</i> , European MRS (Strasbourg)
2003	Co-chair, MRS Spring Meeting (San Francisco, USA)
1998	Chair, 11 th International Conference on Ion Beam Modification of Materials (Amsterdam)
1997	Co-organiser, Symposium <i>Materials and devices for Si based opto-electronics</i> , MRS Spring Meeting (San Francisco, 1997)
1996	Co-organiser, Symposium <i>Rare earth doped semiconductors II</i> , MRS Spring Meeting (San Francisco, 1996)
1994	Co-organiser, Symposium <i>Film synthesis and growth using energetic beams</i> , MRS Fall Meeting (Boston, 1994)