Date	12/09/2023

Section A. PERSONAL DATA

First Name	Morten Andreas		
Family Name	Geday		

A.1. Current Position

Organism	Universidad Politécnica de Madrid		
Dptment./Center	CEMDATIC/ ETSI-Telecomunicación,		
Address	Av. Complutense Nº 30, 28040 Madrid, España		
Telephone		correo electrónico	morten.geday@upm.es
Professional Category	Full Professor	Fecha inicio	27/02/23
UNESCO code	221093		
Keywords	Integrated photonics, adaptive optics, liquid crystals, birefringence, crystal optics, biosensors, micro electronics		

A.2. Academic education

Degress	Universidad	Año
B.Sc+M.Sc (Chem.-Biotech): Cand. Scient. Kem-biotek	Århus Universitet, Dinamarca (DK)	1997
Ph.D: D.Phil. in Physics	Jesus College, Oxford University	2002

A.3. Research quality

Sexennial research period recognised by the Spanish Authorities
5 thesis supervised successfully over the last 10 year, and 3 are in the process
Citations: 778 (WOS 01/12/2020)
Average citations/year in the last 5 years:: 50.2 (WOS)
Publications e: 72 total according to WOS
H Index: 14 (Web of Science Core Collection 05/10/22)

Section B. CV SUMMARY

Morten A. Geday is Associated professor at the Universidad Politécnica de Madrid (UPM) since 2012. His scientific trajectory has been characterised by being extraordinarily broad in both geographical and scientific terms. His master-thesis was centred on protein structures determined by x-ray crystallography, and his first scientific paper was on inorganic salts and DNA interactions. His Ph.D., post doc and first employment in a spin-off company was related to the study of circular and linear birefringence and dichroism, and the development of instruments to quantify these characteristics. Since his incorporation at the UPM, his research has been centred on the development, characterisation, and simulation of liquid crystal devices, with applications outside conventional liquid crystal displays.

Dr. Geday did his studies in Chemistry and Biotechnology, Aarhus University (DK), with an 8 Month stay in the chemistry department of chemistry in University of Calabria (IT). He did his Ph.D. in condensed matter physics in 2001, Oxford University (UK), with three months stay at Washington University (US) chemistry department in 2000. Having worked three years in a spin-off company in the UK, he was granted in 2004 an incorporation grant and 2005 a five-year Ramón y Cajal research fellowship at the UPM, which in 2008 was converted into an I3-fellowship which was again converted into a permanent position as Associate professor (*Professor Titular*) in 2012.

He has co-authored more than 150 research articles and conference communications and has filed 7 patents. He has been the coordinator of three European project (Raptadiag [FP7], All [Attract-eu, HZ2020], IALL [Attract2-EU, HZ2020]), IP of both private and public (regional and national) projects and participated in more than 15.

Dr. Geday has participated in 5 ESA-ITTs, centred on photonic component surveying characterising and testing. He was leading the project ESA TEC project “Programable

Optical Adaptive Element", which studied the suitability of LC phase devices in space environment".
Dr. Geday has recently participated in projects related to reflect array technologies directed by Prof. Encinar, funded by either the national research plan (TEC2013-43345-P), by private entities, or by the European Union (ADRIADNE)

Section C. MOST RELEVANT MERITS

C.1. Publications (10 of the highest impact in the last 5 years)

1. Gordo F.J., Tátá, J., Borme, J., Geday, M.A., Caño-García, M. and Nieder, JB. "Design and manufacture of an all-polymeric integrated multimode interferometer for visible photonics," Opt. Express 30, 31147-31156 (2022)
2. Paz, L.F., Caño-García, M., Geday, M.A. et al. Identification of dyes and matrices for dye doped polymer waveguide emitters covering the visible spectrum. Sci Rep 12, 6142 (2022). https://doi.org/10.1038/s41598-022-10145-8
3. de Blas, M.G., García, J.P., Andreu, S.V., Quintana, X, Caño-García, M., Geday, MA "High resolution 2D beam steerer made from cascaded 1D liquid crystal phase gratings" Sci Rep 12, 5145 (2022). https://doi.org/10.1038/s41598-022-09201-0
4. Rodríguez-Cortina, M., Adamiec, P., Barbero, J., Caño-García, M., Quintana, X, Geday, MA, "Near-infrared, visible, and ultraviolet lidar echo emulator," Opt. Express 30, 2173-2185 (2022)
5. García de Blas, M.; Geday, M.A.; Otón, J.M.; Quintana Arregui, X. Two-Dimensional Digital Beam Steering Based on Liquid Crystal Phase Gratings. Appl. Sci. 2021, 11, 3632. https://doi.org/10.3390/app11083632
6. Rodríguez-Cortina M., Adamiec P., Barbero J., Quintana X., Geday M. A., "Emulation Technique of Multiple Overlapped Return Echoes of a Spatial LIDAR With 100-dB Dynamic Resolution," in IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-7, 2021, Art no. 7005307, doi: 10.1109/TIM.2021.3092778.
7. Geday, M.A. ;Caño-García M.; Otón, J.M.; Quintana, X, "Adaptive Spiral Diffractive Lenses—Lenses With a Twist", Adv. Opt. Mat. 2020, 2001199, DOI: 10.1002/adom.202001199
8. Oton, E.; Oton, J. M.; Cano-Garcia, M.; Escolano, J. M.; Quintana, X.; Geday, M. A., "Rapid detection of pathogens using lyotropic liquid crystals", Optics Express, 2019, 27(7), 10098-10107 Doi: 10.1364/OE.27.010098
9. Oton, E.;Morawiak, P.;Mazur, R.;Quintana, X.;Geday, M.A.;Oton, J.M.;Piecek, W. "Diffractive and Refractive Liquid Crystal Devices Based on Multilayer Matrices" J. Lightwave. Tech., 2019, 37(9), 2086-2093, Doi: 10.1109/JLT.2019.2898010,
10. Caño-García M.; Quintana, X; Otón, J.M.; Geday, M.A. "Dynamic multilevel spiral phase plate generator", Sci. Rep. 2018, 8(1) 15804

C.2.a Participation in Competitively funded Project as IP

1. HZ2020 Grant Agreement no. 101004462 EU-Attract2: Subproject: IALL "Integrated Adaptive Liquid Crystal Lens", Union Europeo (CERN), **Coordinador Europeo** y IP, Subvencion UPM €300.000 (Total €500.000). 1/05/22-30/04/24
2. PDC2021-121370-C21: MICIN: LC-LENS: Lentes sintonizables de cristal líquido (I)-dispositivos de cristal líquido, Subvencion UPM: €72.900 (Total €119.130), 30/12/21-29/12/23
3. PID2020-114172RB-C22, MICIN Enhance 5G: Tecnologías habilitantes en antenas para conectividad inteligente en redes 5g de ondas milimétricas y redes futuras, €258.940, 01/09/21-31/08/24
4. HZ2020 Grant Agreement no. 777222 EU-Attract: Subproject: ALL "Adaptive Liquid Crystal Lens", Union Europeo (CERN), **Coordinador Europeo** y IP, Subvencion UPM 70.000€ (Total 100.000€). 21/05/2019-21/05/2020
5. PEJD-2018-PRE/TIC-8589, Comunidad Autónoma de Madrid, "Contratación de investigador predoctoral", 2019-2020, 25.000€

6. IND2017/TIC7758, Comunidad Autónoma de Madrid, Alter Technology TUV. "Doctorado Industrial", IP: M.A. Geday 2018-2020, Subvencion UPM 67.800 (Total 112.800 €)
7. TEC2016-77242-C3-2-R: MINECO: "Estructuras sublongitud de onda de capa delgada para circuitos fotonicos (II) guiaondas activas y chips fotonicos", (SUBTOPIC). 2017-2019, 168.069 €
8. FP7-HEALTH-F3-2012-304814: Unión Europea: "RaptaDiag: Rapid Aptamer based diagnostics for bacterial meningitis" 2012-2015, **Coordinador Europeo** y IP. Subvencion total 2.168.548€. Subvencion UPM 1.035.417,68 €.
9. QM100945052: UPM y Comunidad Autónoma de Madrid: "Fibras Fotónicas Reflexivas de Cristales Líquidos" 2010–2011, 10.086 €.
10. ITT AO/1-5476/07/NL/EM: Agencia Espacial Europea (ESA): "POE, Programmable Optoelectronic Adaptive Element" 2008–2010, de la ESA. 125.000 €.

C.2.b Participation in Competitively funded Project as researcher last 10 years

11. ESA AO1-1024520NLKML, European Space Agency, "Smart Heater" 120.000€, PI: Xabier Quintana Arregui (01/01/2020-31/12/2022)
12. IND2020/TIC-17414, Comunidad Autónoma de Madrid, Lasing S.A. "Doctorado Industrial", Subvencion UPM 90.000 (Total 165.000 €), 21/12/20-20/12/23,
13. TSI-063000-2021-82, MINECO, DISRADIO "Gestión de Recursos Radio y Desarrollo de RIS", IP: C. Carrasco Yepez UPM-GFA 25.000€
14. HZ2020 Grant Agreement no. 871464: ARIADNE "Artificial Intelligence Aided D-band Network for 5G Long Term Evolution" Subvencion UPM-GFA 35.000€. 09/12/2019-08/12/2022, IP: JM. Riera Salis
15. P2018/NMT-4326: Comunidad Autónoma de Madrid "Sensores e Instrumentación en Tecnologías Fotónicas2 (SINFOTON2-CM)", IP: X. Quintana ,227.700€
16. TEC2013-47342-C2-1-R: MINECO: "Una Nueva Generación de Dispositivos Fotónicos basada en Materiales autoorganizados: Fabricación (UNDOMATOR)", IP: J.M. Otón y X. Quintana. 2014-2016, 250.591 €
17. TEC2013-43345-P: MINECO: "Nuevos conceptos en reflectarrays y transmitarrays para antenas innovadoras y su validacion experimental", IP: J.A. Encinar. 2014-2016, 171.000 €
18. TEC2008-00147: MICINN, COSOLIDER C, "Dispositivos ópticos adaptativos de cristal líquido (ALCOD)", IP: J.M. Otón, 2009-2013, 438,504 €
19. S2013/MIT-2790: Comunidad Autónoma de Madrid "Sensores e Instrumentación en Tecnologías Fotónicas (SINFOTON-CM)", IP: J.M. Otón. Fase 1: Oct 2014- Sep 2016, 77.262€, Fase 2: Oct. 2014- Sep. 2018,154.000€

C.3.a Participation in Privately funded Project as IP

1. Referencia Fundetel: *TFB.MAG.001 UK* "Consultancy and installation of equipment for the measurement of pretilt in reflective liquid crystal cells", *Compound Photonics Ltd., UK*, IP M.A. Geday, Universidad Politécnica de Madrid, (01/11/2015-01/12/2015) €8.250
2. Referencia Fundetel: TFB.JOS.001 STANISLAW "Manufacturing of electrodes for beam steering", *Military University of Technology, Varsovia, PL,* IP M.A. Geday, Universidad Politécnica de Madrid, (01/07/2015- 01/08/2015) €1.400

C.3.b Participation in Privately funded Project as researcher

3. "Pixieray Liquid Crystal Lenses". I.P X. Quintana (01/06/22-31/07/22) 21.000€
4. "Diseño de una antena reflectarray a 100GHz sintonizable basada en cristal líquido" Huawei. Participan tres grupos de la UPM. El Grupo de Fotónica Aplicada fabrica el reflectarray y participa en el diseño. Tiene un presupuesto de 17.685€ de un total de 191.725. Duracion: 01/11/17 a 01/06/18. Investigador responsable del Grupo de Fotónica Aplicada: Xabier Quintana, global IP: J.A. Encinar
5. "Liquid Crystal Optical Retarders", *Visual Display, S.L.* IP: X. Quintana, Universidad Politécnica de Madrid (01/01/2008-01/06/2010) . IP: X. Quintana, €8.000

6. "Nuevos Tipos de Retardadores Ópticos de Cristal Líquido", *Visual Display, S.L.* IP: X. Quintana, (01/01/2012-31/12/2012) €10.000

C.4. Patents

1. Cano Garcia Manuel, Oton Sanchez Jose Manuel, Geday Morten Andreas, Quintana Arregui Patxi Xabier, Elmogi Ahmed, Mattelin Marie-Aline, Missinne Jeroen, VanSteenberge Geert; "Metodo y dispositivo reconfigurable para el guiado de una señal óptica con dos polarizaciones perpendiculars"; es2671218 (a1); es2671218 (b2); 2018-06-05
2. Cerrolaza Martínez Beatriz , Carrasco Vela Carlos , Geday Morten Andreas , Otón Sánchez José Manuel , Quintana Arregui Patxi Xabier ; Method for manufacturing personalised optical document security elements and the element obtained; wo2019086726 (a1); 2019-05-09
3. Encinar Garcinuno Jose Antonio , Perez Palomino Gerardo , Barba Gea Mariano , Quintana Arregui Xavier , Geday Morten Andreas , Oton Sanchez Jose Manuel , Broquetas Ibars Antoni , Abril Aguilera Jordi , Nova Lavado Enrique ; "Reconfigurable beam reflectarray antenna for frequencies in the terahertz and millimeter-wave range"; es2388213 (a1); es2388213 (b2); 2012-10-10
4. Geday Morten Andreas, Cano Garcia Manuel, Oton Sanchez Jose Manuel, Quintana Arregui Patxi Xabier, Geday Jacob Andreas; "Dispositivo optico configurable"; es2711456 (a1); 2019-05-03
5. Geday Morten Andreas , Oton Martinez Eva , Escolano Moyano José Miguel , Oton Sanchez José Manuel , Quintana Arregui Xabier ; "Method for amplifying the detection of targets in an aligned liquid crystal matrix"; es2499790 (a1); es2499790 (b2); wo2015193525 (a1); 2014-09-29
6. Geday Morten Andreas , Quintana Arregui Patxi Xabier , Otón Sánchez Jose Manuel , Cerrolaza Martínez Beatriz , Carrasco Vela Carlos ; "Optical device and method for achieving multiple latent images for document security"; us2018290479 (a1); 2018-10-11
7. Quintana Arregui Patxi Xabier , Andreas Geday Morten , Otón Sánchez José Manuel , Cerrolaza Martinez Beatriz , Carrasco Vela Carlos ; "Method and device for document security by generating multiple reflective and transmissive latent images"; us2019070888 (a1); 2019-03-07

C.5. Other merits

01/01/01-01/03/04 Responsible for the "MetriPol" project. Development and commercial launch of a quantitative birefringence microscope. (Oxford Cryosystems Ltd., UK)

01/01/11 Co-funder of Alise Devices S.L. Principally involved with IP protection and IP generation within the company.

C.6. Research management

Coordinator of the UPM Ph.D. Programme "ITC: Materials and Devices" since 01/09/2017