

Curriculum vitae

Philippe Edouard Louis Ghislain LECLERE

Personal Data

Place and date of birth : Bastogne (Belgium), 6th of April, 1966 (57 yrs).

Country of citizenship: Belgium.

Professional Address: Laboratory for Physics of Nanomaterials and Energy (LPNE)
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Education

1985-1989 : M. Sc., Physics (« Licence en Sciences Physiques »)
University of Liège (Belgium).

1989-1994 : Ph. D., Sciences (Physics) (« Docteur en Sciences »)
University of Liège (Belgium).

Dissertation entitled (in French):

« Etude et caractérisation de films d'alcool polyvinylique photosensibilisés en vue de leur utilisation en holographie et en conjugaison de phase optique »

265 pages (1994) (Supervisor : Prof. Y. Lion).

Professional positions

1990-1994: I.R.S.I.A. (now F.R.I.A.) Research Fellow
Laboratoire de Physique Générale – HoloLab (Prof. Y. Lion)
University of Liège, Liège (Belgium).

1995-2001: Research Assistant
Laboratory for Chemistry of Novel Materials (Prof. J.L. Brédas)
University of Mons-Hainaut, Mons (Belgium).

2001-2004: Research Fellow (Chargé de recherche)
Laboratory for Chemistry of Novel Materials (Prof. R. Lazzaroni)
University of Mons-Hainaut & Materia Nova (Research Center)
Mons (Belgium).

2004-2014: Research Associate Fellow (Chercheur Qualifié) from the Belgian National Science Foundation (FNRS – Fonds National de la Recherche Scientifique).
Laboratory for Chemistry of Novel Materials (Prof. R. Lazzaroni)
Center of Innovation and Research in MAterials & Polymers (CIRMAP)
University of Mons (UMONS), Mons (Belgium).

2003-2013: Visiting Scientist at the "Laboratory of Macromolecular and Organic Chemistry",
Institute for Complex Molecular Systems (ICMS) (Prof. E.W. Meijer)
Technische Universiteit Eindhoven (TU/e), Eindhoven (The Netherlands).

- 2013 - **Visiting Scientist at the "Department of Chemical Engineering and Chemistry, Laboratory for Functional Organic Materials and Devices" Technische Universiteit Eindhoven (TU/e), Eindhoven, (The Netherlands) (Prof. Dr. D.J. Broer and Prof. Dr. A.P.H.J. Schenning).**
- 2014-2020: Senior Research Associate Fellow (Maître de Recherches) from the Belgian National Science Foundation (FNRS – Fonds National de la Recherche Scientifique).
Laboratory for Chemistry of Novel Materials (Prof. R. Lazzaroni)
Center of Innovation and Research in MAterials & Polymers (CIRMAP)
University of Mons (UMONS), Mons (Belgium).
- 2010-2018: Visiting scientist at Center for Nanophase Materials Sciences (CNMS)
Oak Ridge National Laboratory (ORNL), Oak Ridge, TN (USA)
(3 stays corresponding to a total on one month)
- 11/2017: Visiting scientist as « Chercheur CNRS » at the Institut Matériaux Microélectronique Nanosciences de Provence (IM2NP) UMR 7334, Universités d'Aix-Marseille et de Toulon (France). (one month)
- 05-06/2018: - Visiting Scientist at KTH de Stockholm. Laboratory « Nanostrukturfysik »
Department of Applied Physics (Prof. David Haviland).(one month)
- 2017 -2021 Associate Professor at the University of Mons (UMONS), Mons, Belgium.
- 2020 -2021 Research Director (Directeur de Recherches) from the Belgian National Science Foundation (FNRS – Fonds National de la Recherche Scientifique).
Laboratory for Chemistry of Novel Materials (Prof. R. Lazzaroni)
Center of Innovation and Research in MAterials & Polymers (CIRMAP)
University of Mons (UMONS), Mons (Belgium).
- 2021 -2022 Professor at the University of Mons (UMONS), Mons, Belgium.
- 2022 - Honorary Research Director from the Belgian National Science Foundation (FNRS – Fonds National de la Recherche Scientifique) at the University of Mons (UMONS), Mons, Belgium.**
- 2022 - Full Professor at the University of Mons (UMONS), Mons, Belgium.**

Scientific organisation membership

- **President of the Royal Belgian Society for Microscopy (BSM) vzw.**
- **President of PromOptica asbl.**
- **President of NanoWal asbl (the Wallonia Network for Nanotechnologies).**
- European Optical Society (EOS) (Member and Member of the National Organization Society (NOS) and Scientific Advisory Committee (SAC)).
- Materials Research Society (MRS) (Member).
- American Chemical Society (ACS) (Member).
- **Member and auditor (2012-2026) of the European Microscopy Society (EMS).**
- **Member of the International Federation of Societies for Microscopy (IFSM).**
- Member of the Comité Scientifique des Forums de Microscopie à Sonde Locale.
- Member of the International Scientific Advisory Committee of the 15th European Microscopy Congress (EMC 2012), September 16 – 21, 2012, Manchester, UK.
- Member of the Collège des Alumni de l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique.
- Chairman and Treasurer of the *International Conference on Scanning Probe Microscopy on Soft and Polymeric Materials (SPMonSPM) 2012*, September 23 – 26, 2012, Kerkrade (The Netherlands).
- Member of the Organizing Committee of the *International Conference on Scanning Probe Microscopy on Soft and Polymeric Materials (SPMonSPM) 2014*, September 02 - 06, 2014, Toronto, ON (Canada).
- Chairman of the session *Materials Science: Polymers and Organic Materials*" of the 18th International Microscopy Congress (IMC 2014), September 07 – 12, 2014, Praha, (Czech Republic).

- Member of the International Advisory Committee of the *International Conference on Scanning Probe Microscopy on Soft and Polymeric Materials (SPMonSPM) 2016*, August 26 – 30, 2016, Changchun, (PR of China).
- Member of the *International Scientific Advisory Committee of the 16th European Microscopy Congress (EMC 2016)*, August 28 – September 02, 2016, Lyon (France).
- Chairman of the Symposium B: *Scanning Probe Microscopy for Energy Applications of the E-MRS Fall Meeting 2017*, September 18-21, 2017, Varsaw (Poland).
- Chairman of the *International Conference on Scanning Probe Microscopy on Soft and Polymeric Materials (SPMonSPM) 2018*, August 20 – 24, 2018, Leuven (Belgium).
- Member of the organising committee of the *21st International Scanning Probe Microscopy (ISPM) Conference*, May 26 – 29, 2019, Louvain-la-Neuve (Belgium).
- Member of the organising committee of the *22nd International Scanning Probe Microscopy (ISPM) Conference + International Conference on Scanning Probe Microscopy on Soft and Polymeric Materials (SPMonSPM) 2020* = I(SPM)³, May 31 – June 4, 2020, Breckenridge, CO (USA).
- Chairman of the Symposium "CH03: *Frontiers in Scanning Probe Microscopy – Beyond Imaging of Soft Materials*" du "MRS Fall Meeting 2021", November 29 – December 02 2021 Boston, MA (USA) and December 02 – 06, 2021 (virtual).
- Member of the International Scientific Committee of the «*International Symposium on Polymer Nanocomposites (ISPN) 2022 : from Elaboration to Applications*», September 28 – 30, 2022 Lorient (France).
- Chairman of the Symposium "CH01—*Advanced Characterization Methods of Energy Material Applications*" du "MRS Fall Meeting 2023", November 26 – December 01 2023, Boston, MA (USA) and December 05 – 07, 2023 (virtual).

Research Interests

- Characterization by means of scanning probe microscopy (SPM) techniques of the morphology and the nanoscale properties (such as electrical and mechanical properties) of organic and hybrid systems including polymer blends, nanocomposites, block copolymers, liquid crystals, hydrogels, and supramolecular (nano)structures (build by self-assembly of functional (macro)molecules). These systems are mainly studied for their use in organic electronics and energy harvesting devices (field effect transistors, organic light emitting diodes, (hybrid) photovoltaic solar cells, batteries, nanodielectrics, and (bio)sensors), and biological-based materials such as bioglue (recombinant proteins), hydrogels, bacteria, and cells.
- Characterization of the piezoelectric properties of piezoelectric polymers films, nanofibers, and nanocomposites.
- Development of novel SPM techniques (such as *in situ* electrochemical cell, *in situ* photoconductive atomic force microscopy, ...) and methodologies to quantitatively determine mechanical and electrical properties of polymeric materials and nanocomposites at the nanoscale.
- Development of Machine Learning algorithms (Python codes) for SPM data clustering, model optimization, and deep learning processes.

Participation to (inter)national meetings (complete list available upon request)

- 285 oral communications (including 65 invited talks & keynote speaker talks).
- 162 poster communications.

Publications in international journals (with selection committee):

- 189 publications. (complete list available upon request)
- **Statistics** : (Source ISI Web of Science)
 - Sum of the Times Cited : 6262
 - Citing Articles : 5284
 - Average Citations per Item : 33,13
 - **h-index : 45**

For more details, please visit :

<http://staff.umons.ac.be/philippe.leclere/indexEn.html>

https://www.researchgate.net/profile/Philippe_Leclere

<https://orcid.org/0000-0002-5490-0608>

<https://www.mendeley.com/profiles/philippe-leclere/>



Awards and fellowships

- Best oral communication "4th International Union of Materials Research Societies International Conference in Asia (IUMRS-ICA-97)", Makuhari - Chiba (Japan), September 16 – 18, 1997.
- Post-doctoral stay from January, 1 to December 31, 2003 in the «Laboratory of Macromolecular and Organic Chemistry (Prof. E.W. Meijer) - Technische Universiteit Eindhoven (TU/e)», Eindhoven (The Netherlands).
- Bulletin of the Chemical Society of Japan (BCSJ) Award Article (September 2007)
The Self-assembly of Amphiphilic Oligothiophenes: Hydrogen Bonding and Poly(glutamate) Complexation,
F. Brustolin, M. Surin, V. Lemaur, G. Romanazzi, Q. Sun, J. Cornil, R. Lazzaroni, N.A.J.M. Sommerdijk, **Ph. Leclère**, and E.W. Meijer,
Bulletin of the Chemical Society of Japan **80** (2007), 1703-1715.
- Laureate of the "Veeco Labs HarmoniX Innovation Grant" (December 2008)
Project: *Biomimetic Surfaces: Adhesives for the Future !*
- Seeing at the Nanoscale VII Best Poster Award (July 2009)
White-Light Emitting Supramolecular Polymers,
Ph. Leclère, R. Abbel, M. Surin, W. Pisula, R. Lazzaroni, E.W. Meijer, and A.P.H.J. Schenning.

Major Grants & Projects

- FRFC (2.4.568.06 F) - 2005
Project: "Etude microscopique de nanostructures organiques avec une résolution moléculaire" (120.000 euros).
- CGRI-FNRS-CNRS TOURNESOL - 2007 between « Service de Chimie des Matériaux Nouveaux (UMH) » and « Laboratoire d'Electronique Moléculaire Organique & Hybride (LEMOH) (UMR 5819) » - Structures et Propriétés d'Architectures Moléculaires (SPrAM) - Institut Nanosciences et Cryogénie (INAC) - Commissariat à l'Energie Atomique (CEA) Grenoble (France).
Project: « Etude de la structure et des propriétés électroniques de matériaux conjugués par microscopies à sonde locale » (10.000 euros)
- CGRI-FNRS-CNRS - 2008 between « Service de Chimie des Matériaux Nouveaux (UMH) » and « Laboratoire d'Electronique Moléculaire Organique & Hybride (LEMOH) (UMR 5819) » - Structures et Propriétés d'Architectures Moléculaires (SPrAM) - Institut Nanosciences et Cryogénie (INAC) - Commissariat à l'Energie Atomique (CEA) Grenoble (France).
Project: « Etude de la structure et des propriétés électroniques de matériaux conjugués par microscopies à sonde locale » (10.000 euros)

- CGRI-FNRS-CNRS - 2009 between « Service de Chimie des Matériaux Nouveaux (UMH) » and « Laboratoire d'Electronique Moléculaire Organique & Hybride (LEMOH) (UMR 5819) » - Structures et Propriétés d'Architectures Moléculaires (SPrAM) - Institut Nanosciences et Cryogénie (INAC) - Commissariat à l'Energie Atomique (CEA) Grenoble (France).
Project: « *Etude de la structure et des propriétés optoélectroniques de matériaux conjugués – Mise en œuvre pour l'électronique plastique* ». (15.000 euros).
- CDR F.R.S. – FNRS (14505365) - 2012
Project: « *Multifrequency Scanning Probe Microscopy on Multifunctional Soft and Polymeric Materials (MFSPM on MFSPM)* ». (30.000 euros).
- PDR F.R.S. – FNRS (19471118) – 2013 - 2018
Project: « *Hybrid Organic/Inorganic Nanomaterials for Energy CONversion and STORage Devices on FLEXible and Stretchable Substrates (ECOSTOFLEX)*» (513.950 euros).
- Project « Action de Recherche Concertée (ARC) 2016 »
Project « *Production and testing of recombinant sea star adhesive proteins (PROTEST)*». March 2017 - February 2021.
- Project « Action de Recherche Concertée (ARC) 2018 »
Projet « *Impact sur la biogenèse du ribosome de contraintes mécaniques extracellulaires (MECARIBOSYNTH)*». March 2019 -February 2023
- F.R.S. – FNRS Grands Equipements (32761145) - 2018
Project : « *Focused ion beam nano-engineering of scanning probes / Nanofabrication de sondes locales par faisceau d'ion focalisé*».
Partnership : Dr. Benoît Hackens (Promotor – UCLouvain)
Starting of the project: January 2019 (500.000 euros).
- FLAG-ERA - Graphene - Basic Research 2 - 2019
Project: "*PatteRned cOatings based on 2D materials benzoxazine reSin hybrids for broad range Pressure detection - PROSPECT*".
Project coordinated by Prof. D. Beljonne (UMONS)
Starting of the project: May 2020. (36 months)
- Wallonie-Bruxelles International (WBI) Mobilité Asie-Pacifique - 2019
Project: « *Cartographie des propriétés viscoélastiques de matériaux polymères à la nanoéchelle*».
Project in partnership with Prof. K. Nakajima (Tokyo Institute of Technology (TITECH), Tokyo, Japan.]
- Post doctoral grant from the « ARES Commission de la Coopération au Développement (CCD) » for Dr Van Dang Tran (Université Nationale du Vietnam)
March 01 - August 2022 (6 months).
- Grands Equipements F.R.S. – FNRS (40007941) - 2022
Project : « *Interuniversity Platform for the Analysis of the Nanoscale properties of Emerging Materials and their Applications (ipanema)*».
Project in partnership with Prof. M. Voué and Prof. B. Maes (UMONS), Prof. B. Nysten (UCLouvain), Prof. F. Cecchet and Prof. O. Deparis (UNamur), Prof. Th. Visart de Bocarmé and Prof. J. Ustarroz (ULB), and Prof. N.D. Nguyen (ULiège).
Starting of the project : January 2022 (483.461 euros).
- Projet de Recherche (PDR) F.R.S. – FNRS (40007942) - 2022
Projet : « *Piezoelectric and flexoelectric architectures from hybrid inorganic-organic nanomaterials - PiezoFlexoTronics*».
Project in partnership with Dr. S. Melinte (UCLouvain).
January 2022 – December 2025 (448.413 euros).
- Brazilian National Council of State Funding Agencies (CONFAP) and Wallonie-Bruxelles International (WBI) – 2023-24
Project : MUltiscale Characterization of MATerials for Energy Applications (MUMOMAT)
Project in partnership with Prof. Alex Ferreira (Universidade Federal do Paraná-UFPR (Federal University of Paraná), Curitiba, Brazil).
January 2023 – December 2024.
