

Prof. Philippe Dubois at a quick glance

(Updated in January 2022)



Belgian, born in Charleroi (Belgium), on June 23rd 1965

Married, 2 sons

Master in Chemistry; Ph.D. in Sciences (Chemistry) and postdoc in Chemical Engineering

Current academic positions

In Belgium: -At **University of Mons-UMONS, Mons**

- **Rector/President of the University (European University in EUNICE Alliance)**

- **Full Professor at Faculty of Sciences**

- **Director of the Laboratory of Polymeric and Composite Materials, Center of Innovation and Research in Materials & Polymers CIRMAP**

-At **Materia Nova Research Center, Scientific Director & President of the administration board**

-At **NANO4 S.A. company, Cofounder & President of the administration board**

-At **University of Liège-ULiège, Adjunct Professor**

-At **University of Namur-UNamur, invited Professor**

Internationally: -At **Michigan State University-MSU, Adjunct Professor in Chemical Engineering and Materials Science, Lansing, MI, USA**

-At **University of Luxembourg-Uni.Lu, Honorary Professor at Faculty of Science, Technology and Communication**

-At **Luxembourg Institute of Science and Technology-LIST, Scientific Adviser in the frame of the National Composite Center-Luxembourg (NCC-L), NCC-L Scientific director in 2016/17**

-At **Université Polytechnique Hauts-de-France, Invited Professor, Valenciennes, France**

-At **Sichuan University, Plan 111 International Professor, Chengdu, China**

-At **Zhejiang University-ZJU, Guest Professor at National Key-lab of Chemical Engineering Hangzhou, China**

Representative distinctions and involvements

- Academician - Elected Titular Member of the “Académie Royale de Belgique” (Class of Sciences) (*since 2010*)

- Elected Member of the European Academy of sciences EurASc (Engineering science Division) (*2017*)

- Past President of the Belgium Royal Chemical Society (President in *2007/08*)

- Past Vice-Rector of University of Mons (in charge of research) (*2005-2016*)

- President and Scientific Director of *Materia Nova* asbl Research Center, Mons (B) (*since 1997*)

- Honorary Research Associate by the Belgian National Funds for Scientific Research FNRS (B)

- Member of Direction Boards of, e.g., F.R.S.-FNRS ; ARES - *Académie de Recherche et Enseignement Supérieur*; CRef - *Conseil des Recteurs*; Multitel ASBL, IMBC Spinova, UPHF- *Université Polytechnique Hauts-de-France*.

- Past President of Japan-Belgium Association of Polymer Science (Japan/B, President from 2016-2018)

- Member of International Research Committees/advisory boards of the “Ecole des Mines”, Alès (France), the Center of Molecular and Macromolecular Studies, Lodz (Poland), Institute IMP at University Claude Bernard Lyon 1 (France), Institute of Polymers of the Bulgarian Academy of Science, Sofia (Bulgaria), New Eurasia Foundation (FNE – Russia).
- Member of the Editorial Board of 22 international scientific journals:
 - Associate Editor of Materials Science and Engineering: R: Reports edited by Elsevier (Impact Factor of 36.21)
 - Founding member/Associate Editor of Nanocomposites (Taylor & Francis Group)
 - Editor of Material Science and Engineering with Advanced Research (Verizona Publisher)
 - Member of Editorial Boards of: Biomacromolecules (IF=5.79, ACS) – journal with the highest impact factor in polymer science, Chemistry of Materials (IF=8.54, ACS), European Polymer Journal (Elsevier), Polymer Bulletin (Springer-Verlag), The Open Macromolecules Journal (Bentham Science Publishers Ltd.), Polymer for Advanced Technology (Wiley), Polimery (Industrial Chemistry Research Institute), Reviews of Adhesion and Adhesives (Scrivener Publishing) and Global Journal of Organic Chemistry (Symplex Academic Publishers), Polyolefins Journal (Iran Polymer and Petrochemical Institute), Frontiers in Polymer Chemistry (Nature Publishing group), Journal of Multifunctional Polymers (American Scientific Publishers), Packaging Research (De Gruyter Open Ltd), Coatings (MDPI AG), Journal of Biopolymer Research (OMICs Intern.), Journal of Nanomaterials (Hindawi Publishing), Research (AAAS).
- Current referee for more than 25 international scientific journals

Selected awards & recognitions

In Belgium:

- Master's thesis awarded by the Belgian Royal Chemical Society (1987)
- J.S. Stas Award by the Belgian Royal Chemical Society - Class of Sciences (1994)
- Triennial Award of the Belgian Royal Chemical Society (2000)
- Medal of the Belgian Royal Chemical Society (2008)
- Elected titular member of the Royal Academy of Belgium (class of Sciences) (2010)
- Medal of the Fund for Scientific Research in Flanders “Fonds Wetenschappelijk Onderzoek Vlanderen” (2009)
- Medal of the National Fund for Scientific Research in French Community of Belgium (2010)
- ECO-BOOSTER Belgium National Award : Belgium Award of Energy and Environment (2010)
- ZENOBE 2011 Award : Award for Technological Innovation in Wallonia Region (2011)
- Elected member of the European Academy of sciences EurASc (Engineering Division) (2017)
- FRANCQUI Chair at University of Liège – Agro-Bio Tech (2021)
- **FNRS Quinquennal Award in applied exact sciences (2011-2015)**, the highest scientific award delivered every five years by the Belgium FNRS and personally awarded by King Philippe of Belgium (2016)

International awards :

- European Cereal Award “*Gerbe d’Or*” (1999)
- *Citation Classic Award* by the Institute for Scientific Information ISI (2000)
- *Biennial Award* of the “Groupe Français d’Etudes et d’Applications des Polymères », France (2001)
- *Elected Fellow* of International Union of Pure and Applied Chemistry – IUPAC (2011)
- *Prof. I. Moscickiego Medal* of the Industrial Chemistry Research Institute, Poland (2013)
- *Grand Prix* of the French National Polymer Association GFP, France (2013)
- *Special guest professor* recognition, Zhejiang University, Hangzhou, China (2015)
- *Honorable member* of Nano Canadian Society (2015)
- *PEARL Excellence Award for Research in Luxembourg* (4 million €) delivered by FNR, Luxembourg (2016)
- *ICE Award* in Green Materials Journal delivered by the Institution of Civil Engineers, London, UK (2016)
- *N.N. Semenov’s Medal* from the Academy of Engineering Science, Russia (2016)
- Elected member of the European Academy of sciences EurASc (Engineering science Division) (since 2017)
- *BEPS Lifetime Achievement Award 2018* by the BioEnvironment Polymer Society, New York, USA (2018)
- *Top 2% World Scientists* published by Stanford University; Top 0.2% in *Polymer Sciences* (2020)
- **Personally ranked in “Top 100 materials scientists of the 2000-2010 decade” by Thomson Reuters**
World ranking : 18th (over +500,000 scientists); European ranking : 5th & Belgian ranking : 1st

Overall research activities

Scientific involvement can be summarized as follows: **the key-role of "green" chemistry in nanotechnology and materials science**. Accordingly, his research activities interconnect organic chemistry, organic and

organometallic catalysis, macromolecular chemistry, engineering and science of polymeric and (nano)composite materials.

Illustration by two representative success stories in the field of **Environmentally-Friendly, Bio-Based & High Performance Polymeric Materials**:

1. *The first continuous production by reactive processing of polylactic acid (PLA), the most industrialized bio-based and biodegradable plastic*

From Ph. Dubois' research, has emerged the first continuous production process of the most industrialized bio-based and biodegradable plastic nowadays, polylactic acid (PLA) as obtained starting from a catalytic system discovered and patented by the team of Prof. Dubois and allowing its application by reactive extrusion.

2. *The first anti-biofouling painting free of any biocide based on nanocomposite coatings cured by "metal-free" catalysis and filled with carbon nanotubes*

Prof. Dubois has developed the first "anti-biofouling" painting free of any biocide. This is a silicone nanocomposite coating adequately filled with carbon nanotubes. This painting is applied by spray on surfaces to be protected, e.g., hulls of pleasure boats or super-tanker ships, and its physical action is permanent allowing for a substantial reduction in fuel consumption, in annual production CO₂, and avoiding the dry-docking of vessels to unclog hulls,...

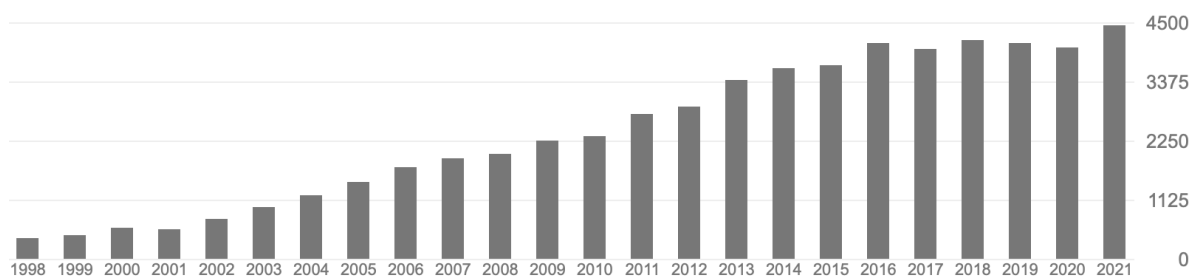
Overall scientific contributions (some representative figures)

- original international scientific publications: **801** (758 peer-reviewed papers and 43 book chapters)
- international and national invention patents: **73** (many led to industrial production and commercialization; 2 allowed for creating a university spin-off Cie : GATE2 S.A. (previously NANO4 S.A.))
- books and scientific special journal issues (author or scientific editor): **11**
- scientific presentations at conferences (only personal contributions): **333** (plus more than 670 by coll.)
- international and national conferences: 35 personal organizations, 65 as member of the scientific committee

- **H-index : 110** (total number of citations : 59,500)
- The most highly cited paper has received 8000+ citations
- PI of **122** financed research projects: 30 (international: EU, NSF), 41 (national), 51 (industrial).
- (Co)direction of 90 Master/DEA/technician theses and 61 PhD theses; supervision of 54 postdocs.

Time-evolution of number of citations per year

(from Google Scholar, in December 2021)



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- In Europe, it is one of the first to demonstrate the potential of local and renewable bioresources in production of plastics able to overcome fossil resources as raw materials. To this end, he combines the polymerization catalysis and reactive processing (particularly reactive extrusion) to produce new multifunctional and adaptive polymeric and (nano)hybrid (bio)materials. From his research, has emerged the first continuous production process of the most industrialized biobased and

biodegradable plastic nowadays, polylactic acid (PLA) as obtained starting from a catalytic system discovered and patented by the team of Prof. Dubois and allowing its application by reactive extrusion.

- In addition, and again as part of its commitment to the preservation of our environment, it has developed the first "anti-biofouling" painting free of any biocide. This is a silicone paint adequately filled with carbon nanotubes, the crosslinking process takes place from an original patented "metal-free" catalysis. This paint is applied by spray on surfaces to be protected, e.g., hulls of pleasure boats or super-tanker ships, and its physical action (without release of any trace of toxic biocide agents) is permanent allowing for a substantial reduction in fuel consumption (estimated to ~120 million tons fuel/year), in annual production CO₂ (estimated to 384 million tons), and avoiding the dry-docking of vessels to unclog hulls,...

These two families of new environmentally friendly polymeric materials are currently undergoing large-scale industrial production, respectively, by Futerro on the one hand and Lippens Painting and Nanocyl on the other.