

## CURRICULUM VITAE

### Personal information

Name, Surname:	<b>Philippe VEBER</b>		
Date of birth:	16.06.1976	Sex:	M
Nationality:	French		
Researcher identifiers:	<a href="https://orcid.org/0000-0002-0204-1266">https://orcid.org/0000-0002-0204-1266</a> <a href="https://www.webofscience.com/wos/author/record/P-7838-2017">https://www.webofscience.com/wos/author/record/P-7838-2017</a>		

### Education

Year	Faculty/department - University/institution - Country
2016	Habilitation to Supervise Research – Faculty of Chemistry - University of Bordeaux, France
2005	PhD in Physics - Faculty of Physics – University of Bourgogne, France

### Positions - current and previous

Year	Job title – Employer - Country
2023-	CNRS secondment as Researcher - West University of Timisoara (University), Faculty of Physics, Timisoara, Romania
2017-2023	CNRS- Research Engineer – Institute of Light and Matter – University Claude Bernard Lyon 1, Villeurbanne, France
2007-2017	CNRS (National Centre for Scientific Research)- Research Engineer – Institute of Solid-State Chemistry of Bordeaux – University of Bordeaux, Pessac, France
2007-2007	Research Engineer – Atomic Energy Centre – Grenoble, France
2006-2007	Research Engineer – CRISTAL LASER SA – Messein, France
2004-2005	Teaching Assistant – University of Bourgogne, Dijon, France

### Project management experience

Year	Project title - Role – Funder – Budget – link to project webpage
2023-2026	Project director (code: COR 122312) of ESCARGOT project (Enhanced Single Crystal Applications and Research in the Growth of new Optical rare earth-based compounds for sustainable and efficient Technologies), National Recovery and Resilience Plan (PNRR), Funding contract n°: 760080/23.05.2023 (code 136/15.11.2022), Budget: 1.400.000 € -
2023-2025	Local Project coordinator of SMART GROWTH (Artificial intelligence enhanced, sustainable growth of rare-earth materials based laser crystals), European Innovation Council and SMEs Executive Agency (EISMEA), Interregional Innovation Investments instrument (I3), contract n°: 101115130, Budget: 100.000 € (Whole project budget : 3.000.000 €) - <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-details/44416173/101115130/I3">https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-details/44416173/101115130/I3</a>
2015-2019	Local Project coordinator of HECATE project funded by French Agency for research, grant n°14-CE07-0028, Budget : 140.000 € (Whole project budget : 834.609 €) - <a href="https://anr.fr/Project-ANR-14-CE07-0028">https://anr.fr/Project-ANR-14-CE07-0028</a>
2015-2019	Local project coordinator of ITN (Innovative Training network), Marie Skłodowska-Curie Actions, EJD-FUNMAT (European Joint Doctorate-Functional Materials), European grant

	n°: 641640, Budget : 120.000 € (Whole project budget : 3.779.224€) - <a href="https://cordis.europa.eu/project/id/641640">https://cordis.europa.eu/project/id/641640</a>
2009-2014	Local project coordinator of Erasmus Mundus IDS-FUNMAT (International Doctoral School-Functional Materials), n°: FPA 2010-004/001-001, SGA 2014-0966, European grant n° 2013-07, Budget : 120.000 € (Whole project budget : 3.000.000 €)

#### Other relevant professional experiences

Year	Description - Role
2023-2025	National representative of French crystal growth organizations at the scientific council of International Organization of Crystal Growth (IOCG) - <a href="https://www.iocg.org/officers-and">https://www.iocg.org/officers-and</a>
2018-	Member of French Committee for Crystal Growth – Scholarly society AFC (French Association of Crystallography) - <a href="https://www.afc.asso.fr/l-association/vie-de-lassociation/axes-transverses-main/croissance-cristalline">https://www.afc.asso.fr/l-association/vie-de-lassociation/axes-transverses-main/croissance-cristalline</a>
2020-2024	Head of CNRS national technological network “CRISTECH” (Crystal growth technologies) – 500 members - <a href="https://cristech.cnrs.fr/reseau/copil/">https://cristech.cnrs.fr/reseau/copil/</a>
2016-2020	Bureau member in charge of Formations in the steering committee of CNRS national technological network “CRISTECH”
2009-2016	Member of the steering Committee of CNRS national technological network “CRISTECH”
2009-2015	Member of the steering Committee of CNRS national technological network “CMDO” (Optical single crystals and related devices) – 300 members

#### Main track records over the last 10 years

1) Flux growth at 1230 degrees C of cubic Tb<sub>2</sub>O<sub>3</sub> single crystals and characterization of their optical and magnetic properties

Authors: Veber, P.; Velazquez, M.; Gadret, G.; Rytz, D.; Peltz, M.; Decourt, R.

Published: 2015 in CrystEngComm

DOI: 10.1039/C4CE02006E

Citation: 61

2) Orientation-dependent electromechanical properties of Mn-doped (Li,Na,K)(Nb,Ta)O<sub>3</sub> single crystals

Authors: Liu, H. R.; Koruza, J.; Veber, P.; Rytz, D.; Maglione, M.; Rodel, J.

Published: 2016 in Applied Physics Letters

DOI: 10.1063/1.4964465

Citation: 41

3) High-performance piezoelectric (K,Na,Li)(Nb,Ta,Sb)O<sub>3</sub> single crystals by oxygen annealing

Authors: Hairui Liu, Philippe Veber, Jürgen Rödel, Daniel Rytz, Pavel B. Fabritchnyi, Mikhail I. Afanasov, Eric A. Patterson, Till Frömling, Mario Maglione, Jurij Koruza.

Published: 2018 in Acta Materialia

DOI: 10.1016/J.ACTAMAT.2018.02.026

Citation : 40

4) EURECA Conceptual Design Report

Authors: Angloher, G.; Armengaud, E.; Augier, C.; Benoit, A.; Bergmann, T.; Blumer, J.; Broniatowski, A.; Brudanin, V.; Camus, P.; Cazes, A. *et al.*

Published: 2014 in Physics of the Dark Universe

DOI: 10.1016/J.DARK.2014.03.004

Citation : 38

5) Influence of Crystal Orientation and Annealing on the Oxygen Diffusion and Surface Exchange of La<sub>2</sub>NiO<sub>4+δ</sub>

Authors: Burriel, M.; Tellez, H.; Chater, R. J.; Castaing, R.; Veber, P.; Zaghioui, M.; Ishihara, T.; Kilner, J. A.; Bassat, J. M.

Published: 2016 in The Journal of Physical Chemistry C  
DOI: 10.1021/ACS.JPCC.6B05666  
Citation : 39

6) Temperature Dependence of Structural and Transport Properties for  $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3$  and  $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_{2.5}\text{O}_{0.5}$   
Authors: Thibault Broux, Benoît Fleutot, Rénald David Annelise Brüll, Philippe Veber, François Fauth, Matthieu Courty, Laurence Croguennec and Christian Masquelier  
Published: 2018 in Chemistry of Materials  
DOI: 10.1021/ACS.CHEMMATER.7B03529  
Citation : 36

7) Exploratory growth in the  $\text{Li}_2\text{MoO}_4\text{-MoO}_3$  system for the next crystal generation of heat-scintillation cryogenic bolometers  
Authors: Velazquez, Matias; Veber, Philippe; Moutatouia, Meryem; de Marcillac, Pierre; Giuliani, Andrea; Loaiza, Pia; Denux, Dominique; Decourt, Rodolphe; El Hafid, Hassan; Laubenstein, Matthias, Stefanos Marnieros, Claudia Nones, Valentina Novati, Emiliano Olivieri, Denys V. Poda , Anastasiia S. Zolotarova  
Published: 2017 in Solid State Sciences  
DOI: 10.1016/J.SOLIDSTATESCIENCES.2016.12.006  
Citation : 32

8) (K,Na) $\text{NbO}_3$ -based piezoelectric single crystals: Growth methods, properties, and applications  
Authors: Jurij Koruza ; Hairui Liu, Marion Höfling, Mao-Hua Zhang and Philippe Veber  
Published: 2020 in Journal of Materials Research  
DOI: 10.1557/JMR.2019.391  
Citation : 31

9) First scintillating bolometer tests of a CLYMENE R&D on  $\text{Li}_2\text{MoO}_4$  scintillators towards a large-scale double-beta decay experiment  
Authors: G. Buşe, A. Giuliani, P. de Marcillac, S. Marnieros, C. Nones, V. Novati, E. Olivieri, D.V. Poda, T. Redon, J.-B. Sand, P. Veber, M. Velázquez and A.S. Zolotarova  
Published: 2018 in Nuclear Instruments and Methods in Physics Research  
Section A: Accelerators, Spectrometers, Detectors and Associated Equipment  
DOI: 10.1016/J.NIMA.2018.02.101  
Citation: 29

10) Growth and Characterization of  $\text{Ba}_2\text{LnFeNb}_4\text{O}_{15}$  (Ln = Pr, Nd, Sm, Eu) Relaxor Single Crystals  
Authors: Albino, M.; Veber, P.; Pechev, S.; Labrugere, C.; Velazquez, M.; Maglione, M.; Josse, M.  
Published: 2014 in Crystal Growth & Design  
DOI: 10.1021/CG401181J  
Citation: 31

## Narrative CV

Philippe Veber works since 2001 in the fields of solid-state physic-chemistry, crystal growth and characterization. He is an expert in bulk inorganic single crystal growth by various methods from high temperature melts and solutions. His career begins with a PhD thesis in Physics obtained at the University of Bourgogne in 2005. He joined the Centre National de la Recherche Scientifique (CNRS) as a research engineer in 2007 following an external state civil service competition. After obtaining his Habilitation to Supervise Research (HDR) in condensed matter physics and chemistry in 2016 at the University of Bordeaux, he reached the final grade of his category in January 2023. After working in various academic and industrial environments in France (CEA: Valduc, Grenoble; Universities: Bourgogne, Bordeaux, Lyon; Cristal Laser S.A.- Messein)

and abroad (II-VI Inc - Coherent - FEE GmbH - Idar-Oberstein, Germany; FZU-Prague, Czech Republic; NIMS-Tsukuba and IMR-Sendai, Japan), he is currently on secondment from the CNRS, as a researcher, for a period of 3 years, at the West University of Timișoara - Romania, in the Crystal Growth Laboratory of the Faculty of Physics.

According to Web of Science categories, his 77 peer-reviewed papers (Hirsch index=19) are mainly related to Materials Science (34%), Chemistry (32%), Physics (31%), Crystallography (24%) and Optics (16%). 21 papers are specifically related to crystal growth journals. He is founder and member of the French Crystal Growth Committee (CFCC) belonging to the French scholarly Association of Crystallography (AFC) and he is the head of the CNRS national technological network CRISTECH (500 members) dealing with any crystallization processes of various compounds (inorganic, organic, molecular, biological). Moreover, he is the representative of French crystal growth organizations at the International Organization of Crystal Growth for 2 years until 2025.

His own experience includes the crystal growth of numerous inorganic materials, ranging from simple oxides and fluorides to polycationic oxide compounds, by any high-temperature-growth techniques. Moreover, he is the main inventor of 3 original patented crystal growth processes. In the past, he previously published 10 joint papers with researchers of the West University of Timisoara on the crystal growth and property characterization of various materials within the framework of French and European projects. In addition, he was the local scientific coordinator in European IDSFunMat and EJD FunMat (ITN) European doctoral schools on the growth of lead-free perovskite by Czochralski, zone leveling (mirror furnace) and flux methods.

At present time, since the end of 2023 until 2026, Philippe VEBER is currently the project director in the National Recovery and Resilience Plan (PNRR) of the project entitled ESCARGOT: “*Enhanced Single Crystal Applications and Research in the Growth of new Optical rare earth-based compounds for sustainable and efficient Technologies*”. The aim of this project is to grow high quality fluoride and oxide crystals by Czochralski, flux and Bridgman methods for optical applications. In addition, from 2023 to 2025, he is the Romanian local coordinator of the SMART GROWTH project entitled: “*Artificial intelligence enhanced, sustainable growth of rare-earth materials based laser crystals*”. The final goal of this project is to implement Artificial Intelligence in an industrial Czochralski process for enhancing the crystal growth yield and the crystal quality.

**In brief, main Philippe Veber’s commitments, leadership positions and significant results in National and European projects are as follows.**

- **2011-2012: local coordination (France) of GIS AMA** (Advanced Materials in Aquitaine) funded by ‘Groupement d’Intérêt Scientifique’ of the CNRS, grant n°: 035120: Head of the Crystal Growth National Facility, in association with NIMS, Tsukuba, Japan. Co-director of a PhD student (Ms Marie Chavoutier ; <https://www.dart-europe.org/full.php?id=647247>).

- Growth and characterization of a new Tb-based polycationic garnet  $\{Tb_3\}[Sc_{2-x}Lu_x](Al_3)O_{12}$  with a high Verdet constant (-164 rad/Tm @632nm) in the visible optical range .

• **2010-2013: in charge of the crystal growth WP in ANR RESONATE (France):** funded by ‘Agence Nationale de la Recherche’, grant n°: ANR 2010 JCJC 0909 01, Rare-Earth SesquiOxide siNgle crystAl growTh by the flux mEthod. Collaboration with Dr Buse.

- Determination of a new flux growth process (twice patented) allowing the growth of cubic rare-Earth sesquioxides  $\text{RE}_2\text{O}_3$  (RE= Rare-Earth or Y) at half their melting point (1250°C) using a low-cost standard technology and non-hazardous solvent.
- First laser demonstration in these new crystals with RE= Gd, Y and Yb dopant
- World’s first growth of cubic  $\text{Tb}_2\text{O}_3$  single crystals (patented) as Faraday’s rotator exhibiting an outstanding Verdet constant at 632 nm (-476 rad/Tm), which is 3.5 times higher than that of the most efficient commercial crystals (-134 rad/Tm).

• **2015-2019: local coordination of ANR HECATE (France),** grant n°: 14-CE07-0028 : High Efficiency piezoelectriC Alternative materials: Towards Environmentally-friendly solutions. Collaboration with Dr. Buse from WUT.

- Contributions to the understanding of the properties and defect chemistry of doped- $\text{BaTiO}_3$  single crystals grown by flux method, and obtaining some of the highest electromechanical properties ( $d_{33}=496$  pC/N) and large-sized crystals (50mm).

• **2009-2014: local coordination (France) of Erasmus Mundus Doctoral School IDS-Fun-Mat,** (FPA 2010-004/001-001, SGA 2014-0966), funded by the European Commission, grant n°2013-07 : lead-free piezoelectric materials, in association with Technische Universität Darmstadt. Co-director of a PhD student (Mrs Hairui Liu ; <https://www.dart-europe.org/full.php?id=647187>).

- Contributions to the understanding of the properties and defect chemistry of doped- $\text{K}_{0.5}\text{Na}_{0.5}\text{NbO}_3$  single crystals grown by flux method, and obtaining some of the highest electromechanical properties in these crystals ( $d_{33}=732$  pC/N).

• **2015-2019: local coordination (France) of Innovative Training Network – Marie Skłodowska Curie Actions - Joint Doctorate in Functional Material Research (EJD-FunMat)** funded by the European Commission, grant n°641640: lead-free piezoelectric material, in association with University of Luxembourg. Co-director of a PhD student (Mr Cong Xin ; <https://www.dart-europe.org/full.php?id=669975>).

- Growth of extremely refractory crystals ( $\text{BaZrO}_3$ ) at 2700°C by mirror furnace and at 1350°C by flux method.

• **Dec. 2023- Dec. 2025: local coordination (Romania) of SMART GROWTH project** (Artificial intelligence enhanced, sustainable growth of rare-earth materials based laser crystals) funded by European Innovation Council and SMEs Executive Agency (EISMEA) under the Interregional Innovation Investments instrument (I3), contract n°: 101115130, <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-details/44416173/101115130/I3>

➤ Under development : implementation of Artificial Intelligence in a software for the control of the growth of garnet crystals in FILAR company (Italy)

• **Dec. 2023- Jun. 2026: project director (Romania) of ESCARGOT project** (Enhanced Single Crystal Applications and Research in the Growth of new Optical rare earth-based compounds for sustainable and efficient Technologies) through the National Recovery and Resilience Plan (PNRR), Funding contract n°: 760080/23.05.2023 (code 136/15.11.2022).