

# Curriculum vitae Europass

C.V. updated on Sept. 30<sup>th</sup>, 2017



## Personal Information

Name(s) / Surname(s)

Position

Professional address

Electronic mel

Birthday, Nationality

## MASQUELIER Christian

Professor of Chemistry, Université de Picardie Jules Verne

Laboratoire de Réactivité et Chimie des Solides, UMR-CNRS 6007  
33 Rue Saint-Leu, 80039 Amiens Cedex 1, France

[christian.masquelier@u-picardie.fr](mailto:christian.masquelier@u-picardie.fr)

May 17<sup>th</sup>, 1965, French

## Diplomas, University Degrees

2000

Habilitation à Diriger des Recherches, Université Paris-XI Orsay, France

1991

PhD in Chemistry, Université Paris-XI Orsay, France

## Positions held

Sept. 2000 – now

Professor of Chemistry, Université de Picardie Jules Verne, Amiens, France

Sept. 1996 – Sept. 2000

Associate Professor of Chemistry, Université Paris XI, Orsay, France

Jan. 1995 – Sept. 1996

Post-Doc, University of Texas at Austin, USA (Pr. J.B. Goodenough)

Jan. 1993 – Dec. 1994

Post-Doc, Osaka National Research Institute, AIST, Japon (Dr. O. Nakamura)

## Admin. Responsibilities

Sept. 2005 – now

Coordinator of the ERASMUS MUNDUS Master Course «Materials for Energy Storage & Conversion

Jan. 2008 – Jan. 2017

Director of the Doctorate School in Science and Health of Université de Picardie Jules Verne, Amiens

Sept. 2014 – now

Chairman of the Crystallography College (5A) at ILL Grenoble

Sept. 2017 – now

Deputy Director (directeur adjoint) of the Laboratoire de Réactivité et de Chimie des Solides (LRCS)

May. 2011 – now

Elected Member of the National Council of Universities, Section 33

## Promotions & Awards

2001

Award of the Solid State Chemistry Division of the Société Française de Chimie

2005

Promoted "Professeur de 1<sup>ère</sup> Classe" by The French National Committee of Universities (C.N.U)

2006

Nominated as Junior Member of the Institut Universitaire de France

2012

Promoted as « Professeur de Classe Exceptionnelle 1 » by the French National Council of Universities (CNU)

2017

Promoted as « Professeur de Classe Exceptionnelle 2 » by the French National Council of Universities (CNU)

2002 - now

Recipient of the "Prime d'Encadrement Doctoral et de Recherche"

## Indicators for Research

131

Publications in International Journals (h = 48)

67

Invited and Keynote oral presentations in International Conferences

> 100

Oral communications and posters in international conferences

13

PhD thesis as principal advisor since 1998, 8 Post-docs

1, 3

Chapter of book, books edited

12

International Patents published, in particular related to LiFePO<sub>4</sub> : first 2 with UT Austin (1997) licensed Worldwide by Hydro-Québec, then several ones with UMICORE & CNRS (2003 - 2007).

## Keywords & of Expertise

Solid State Chemistry, Crystallography, Ionic Conductors, Battery materials, Phosphates, Solid State Batteries, Neutron Diffraction, Synchrotron,

## 10 most cited publications

- 932, 44 p.y. **Effect of structure on the Fe<sup>3+</sup>/Fe<sup>2+</sup> redox couple in iron phosphates**, A.K. Padhi, K. S. Nanjundaswamy, C. Masquelier, S. Okada, and J. B. Goodenough, *J. Electrochem. Soc.* **144** [5], 1609-1614 (1997).
- 487, 41 p.y. **Size effects on carbon-free LiFePO<sub>4</sub> powders: the key for superior energy density**, C. Delacourt, P. Poizot & C. Masquelier, *Electrochem. Solid State Lett.* **9**, A352 (2006)
- 480, 37 p.y. **Toward understanding of electrical limitations (electronic, ionic) in LiMPO<sub>4</sub> (M = Fe, Mn) Electrode Materials**, C. Delacourt, L. Laffont, R. Bouchet, C. Wurm, J.-B. Leriche, M. Morcrette, J.-M. Tarascon & C. Masquelier, *J. Electrochem. Soc.*, **152** (5) A913-A921 (2005)
- 473, 32 p.y. **Effect of particle size on lithium intercalation into α-Fe<sub>2</sub>O<sub>3</sub>**. D. Larcher, C. Masquelier, D. Bonnin, Y. Chabre, V. Masson, J. B. Leriche and J.M. Tarascon, *J. Electrochem. Soc.*, **150**(1) A133-139 (2003)
- 452, 45 p.y. **Room-temperature single-phase Li insertion/extraction in nanoscale Li<sub>x</sub>FePO<sub>4</sub>**, P. Gibot, M. Casas, L. Laffont, S. Levasseur, S. Hamelet, J-M. Tarascon & C. Masquelier, *Nature Materials*, **7**, 741-747 (2008)
- 359, 28 p.y. **The existence of a temperature-driven solid solution for 0 ≤ x ≤ 1 in Li<sub>x</sub>FePO<sub>4</sub>**, C. Delacourt, P. Poizot, J.M. Tarascon & C. Masquelier, *Nature Materials*, **4**, 254–260 (2005)
- 347, 25 p.y. **One step low-temperature route for the preparation of electrochemically active LiMnPO<sub>4</sub> powders** C. Delacourt, P. Poizot, M. Morcrette, J. M. Tarascon & C. Masquelier, *Chem. Mater.*, **16**(1), 93-99 (2004)
- 321, 48 p.y. **Polyanionic (phosphates, silicates, sulphates,..) frameworks as electrode materials for rechargeable Li (or Na) batteries**, C. Masquelier, L. Croguennec, *Chem. Rev.*, **113**(8), 6552-6591 (2013)
- 317, 26 p.y. **Study of the LiFePO<sub>4</sub> / FePO<sub>4</sub> two-phase system by high-resolution electron energy loss spectroscopy** L. Laffont, C. Delacourt, P. Gibot, M. Y. Wu, P. Kooyman, C. Masquelier & J.M. Tarascon, *Chem. Mater.*, **18** (23): 5520-5529 (2006)
- 273, 13 p.y. **Mapping of Transition metal redox energies in phosphates with NASICON structure by lithium intercalation**. A. K. Padhi, K.S. Nanjundaswamy, C. Masquelier, J.B. Goodenough, *J. Electrochem. Soc.*, **144**(8), 2581-2586 (1997).

## 10 recent publications

- Structural and electrochemical studies of novel Na<sub>7</sub>V<sub>4-x</sub>Al<sub>x</sub>(P<sub>2</sub>O<sub>7</sub>)<sub>4</sub>(PO<sub>4</sub>) (x = 1, 2) high voltage electrode materials for Na batteries**. V. M. Kovrugin, J. N. Chotard, R. David & C. Masquelier, *J. Mater. Chem. A*, **5**, 14365-14376 (2017)
- Crystal structure and lithium diffusion pathways of a potential positive electrode for Lithium ion batteries: Li<sub>2</sub>V<sup>III</sup>(PO<sub>4</sub>)(HPO<sub>4</sub>)**, E. Boivin, C. Masquelier, L. Croguennec & J. N. Chotard, *Inorg. Chem.*, **56**(12), 6776 (2017)
- Understanding defects in battery materials through combined DFT/NMR studies: application to LiVPO<sub>4</sub>F**, T. Bamine, F. Boucher, R. J. Messinger, E. Salager, M. Deschamps, C. Masquelier, L. Croguennec, M. Ménétrier, D. Carlier, *J. Phys. Chem C*, **121**(6), 3219–3227 (2017)
- V<sup>IV</sup> disproportionation upon sodium extraction from Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>F<sub>3</sub> observed by operando X-ray Absorption Spectroscopy and Solid State NMR**, T. Broux, T. Bamine, L. Simonelli, L. Stievano, F. Fauth, M. Ménétrier, D. Carlier, C. Masquelier & L. Croguennec, *J. J. Phys. Chem C*, **121**(8), 4103-4111 (2017)
- Pathways to enhance lithium-ion conductivity in solid electrolytes: a mixed polyanion effect in the LISICON-type structure**, Y. Deng, C. Eames, B. Fleutot, J.N. Chotard, E. Suard, C. Masquelier, S. Islam, *ACS Applied Materials & Interfaces*, **137**(28), 9136-9145, (2017)
- Oxidation under air of Tavorite LiVPO<sub>4</sub>F: influence of vanadyl-type defects on its electrochemical properties**, E. Boivin, J. N. Chotard, M. Ménétrier, L. Bourgeois, T. Bamine, D. Carlier, F. Fauth, C. Masquelier, L. Croguennec, *J. Phys. Chem. C*, **120** (46), 26187–26198 (2016)
- Strong impact of the oxygen content in Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>F<sub>3-y</sub>O<sub>y</sub> (0 ≤ y ≤ 0.5) on their structural and electrochemical properties**, T. Broux, T. Bamine, F. Fauth, L. Simonelli, M. Ménétrier, D. Carlier, C. Masquelier, L. Croguennec, *Chem. Mater.*, **28**(21), 7683-7692 (2016)
- Structural and Electrochemical Studies of a New Tavorite Composition: LiVPO<sub>4</sub>OH** E. Boivin, J. N. Chotard, M. Ménétrier, L. Bourgeois, Tahya Bamine, D. Carlier, F. Fauth, E. Suard, C. Masquelier, L. Croguennec, *J. Mater. Chem. A*, **4**, 11030-11045 (2016)
- Discovery of a sodium-ordered form of Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> below ambient temperature**, J.N. Chotard, G. Rousse, R. David, O. Menétré, C. Masquelier, *Chem Mater.*, **27**(17), 5982-5987 (2015)
- Improving the energy density of Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub> – type positive electrodes through V / Al substitution**, F. Lalère, V. Seznec, M. Courty, J. N. Chotard, C. Masquelier, *J. Mater. Chem. A*, **3**, 16198-16205 (2015)
- Singular structural and electrochemical properties in highly defective LiFePO<sub>4</sub> powders**, R. Amisse, M. Sougrati, L. Stievano, C. Davoisne, G. Dražič, R. Dominko, C. Masquelier, *Chem. Mater.*, **27**(12), 4261-4273 (2015)