LIST OF PUBLICATIONS

Frédéric Maillard

Researcher from the

French National Centre for Scientific Research

Laboratory of Electrochemistry and Physico-Chemistry of Materials and Interfaces

I. PATENTS

B1. A. Montaut, S. Moutin, M.J. Chatenet, J.F.C. Durst, **F.T. Maillard**, L. Dubau, "Hollow platinum nanoparticles for fuel cells", CNRS/Grenoble-INP/Air Liquide, US Patent. US20140227632 (European patent n° EP2680353A1).

B2. M. Zimmermann, M. Chatenet, **F. Maillard**, D. Ayme-Perrot, P. Sonntag, "Use of high specific surface area carbon materials as simultaneous counter electrode and reference electrode for electrochemical measurements (Carbone poreux monolithique à haute surface spécifique utilisable comme électrode de référence et contre-électrode au sein de cellules électrochimiques 3 électrodes", World Patent WO2016116382 (A1) — 2016-07-28

II. BOOK CHAPTERS

Ch1. **F. Maillard**, P. Simonov, E. R. Savinova, "Carbon materials as support for fuel cells electrocatalysts", In "Carbon Materials for Catalysis", Serp, P., Figueiredo, J. L., Eds.; John Wiley & Sons, Inc.: New York, (2009), 429-480. DOI: 10.1002/9780470403709.ch12.

Ch2. **F. Maillard**, S. Pronkin, E. R. Savinova, "Size effects in electrocatalysis of fuel cells reactions on supported metal nanoparticles", In Fuel Cell Catalysis: a Surface Science Approach, Koper, M. T. M., Ed.; John Wiley & Sons, Inc.: New York, (2009) 507-566. DOI: 10.1002/9780470463772.ch15.

Ch3. M. Chatenet, L. Guétaz, **F. Maillard**, "Electron microscopy to study MEA materials and structure degradation", In Handbook of Fuel Cells Vol. 5 "Advances in Electrocatalysis, Materials, Diagnostics and Durability", Vielstich W., Gasteiger H.A. Yokokawa H., John Wiley & Sons, Inc.: New York, (2009) 844-860. DOI: 10.1002/9780470974001.f500056.

Ch4. **F. Maillard**, S. Pronkin, E. R. Savinova, "Influence of size on the electrocatalytic activities of supported metal nanoparticles in fuel cells related reactions", In Handbook of Fuel Cells Vol. 5 "Advances in Electrocatalysis, Materials, Diagnostics and Durability", Vielstich W., Gasteiger H.A., Yokokawa H. Eds, John Wiley & Sons, Inc.: New York, (2009) 91-111. DOI: 10.1002/9780470974001.f500002a.

Ch 5. F. Maillard, N. Job, M. Chatenet, "Basics of PEMFC including the use of carbon-supported nanoparticles", in New and Future Developments in Catalysis: Catalysis by Nanoparticles, S.L. Suib Ed., Elsevier, **chapter 17** (2013) 401-423. DOI: 10.1016/B978-0-444-53874-1.00018-4

Ch6. F. Maillard, N. Job, M. Chatenet, "Approaches to synthesize carbon-supported Pt-based electrocatalysts for PEM fuel cells", in New and Future Developments in Catalysis: Batteries, Hydrogen storage and Fuel Cells, S.L. Suib Ed., Elsevier, **chapter 14** (2013) 407-428. DOI: 10.1016/B978-0-44-453880-2.00019-3

Ch7. E. R. Savinova, A. Bonnefont, **F. Maillard**, "Anodic reactions in electrocatalysis: oxidation of carbon monoxide", in Encyclopedia of Applied Electrochemistry, G. Kreisa, K. Ota, F. Savinell Eds., Springer-Verlag GmbH, Heidelberg, (2014) 93-100. DOI: 10.1007/978-1-4419-6996-5_393.

Ch8. T.W. Napporn, L. Dubau, C. Morais, M.R. Camilo, J. Durst, F.H.B. Lima, **F. Maillard**, B. Kokoh, "Tools and Electrochemical *in situ* and *on-line* Characterization Techniques for Nanomaterials", In: Kumar C. (eds), "*In situ* Characterization Techniques for Nanomaterials", Springer, Berlin, Heidelberg (2018) 383-439. DOI: 10.1007/978-3-662-56322-9_11.

III. PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS

 # Papers where I am corresponding author

P1. O. Reynes, **F. Maillard**, J.-C Moutet, G. Royal, E. Saint-Aman, G. Stanciu, J.-P Dutasta, I. Gosse, J.C Mulatier, "Complexation and electrochemical sensing of anions by amide-substituted ferrocenyl ligands", *J. Organomet. Chem.*, **637-639** (2001) 356-363. DOI: 10.1016/S0022-328X(01)00935-4

P2. **F. Maillard**, M. Martin, F. Gloaguen, J.M. Léger, "Oxygen electroreduction on carbon-supported platinum catalysts. Particle-size effect on the tolerance to methanol competition", *Electrochim. Acta*, **47** (2002) 3431-3440. DOI:10.1016/S0013-4686(02)00279-7

P3. **F. Maillard**, F. Gloaguen, F. Hahn, J.-M. Léger, "Electrooxidation of carbon monoxide at ruthenium-modified platinum nanoparticles: effect of the surface mobility on the reaction kinetics", *Fuel Cells*, **3-4** (2002) 143-152. DOI: 10.1002/fuce.200290013

P4. **F. Maillard**, F. Gloaguen, J.-M. Léger, "Preparation of methanol oxidation electrocatalysts: ruthenium deposition on carbon-supported platinum nanoparticles", *J. Appl. Electrochem.*, **33** (2003) 1-8. DOI: 10.1023/A:1022906615060

P5. **F. Maillard**, M. Eikerling, O. Cherstiouk, S. Schreier, E. Savinova, U. Stimming, "Size effects on reactivity of Pt nanoparticles in CO monolayer oxidation: The role of surface mobility", *Faraday Discuss.* **125** (2004) 357-377. DOI: 10.1039/b303911k

P6. **F. Maillard**, E. R. Savinova, P. A. Simonov, V. I. Zaikovskii, U. Stimming, "Infrared spectroscopic study of CO adsorption and electrooxidation on carbon-supported Pt nanoparticles: Inter-particle versus intra-particle heterogeneity", *J. Phys. Chem. B.,* **108** (2004) 17893-17904. DOI: 10.1021/jp0479163

P7. **F. Maillard**, S. Schreier, M. Hanzlik, E. R. Savinova, S. Weinkauf, U. Stimming, "Influence of particle agglomeration on the catalytic activity of carbon-supported Pt nanoparticles in CO monolayer oxidation", *Phys. Chem. Chem. Phys.,* **7** (2005) 385-393. DOI: 10.1039/b411377b

P8. **F. Maillard**, G. -Q. Lu, A. Wieckowski, U. Stimming, "Ru-decorated Pt surfaces as model fuel cell electrocatalysts", *J. Phys. Chem. B.,* **109** (2005) 16230-16243. DOI: 10.1021/jp052277x

P9. B. Andreaus, **F. Maillard**, J. Kocylo, E. R. Savinova, M. Eikerling, "Kinetic modeling of CO monolayer oxidation on carbon-supported platinum nanoparticles", *J. Phys. Chem. B*, **110** (2006) 21028-21040. DOI: 10.1021/jp063856k

P10. **F. Maillard**, E. R. Savinova, U. Stimming, "CO monolayer oxidation on Pt nanoparticles: further insights into the particle size effects", *Special issue of J. Electroanal. Chem., invited article*, **599** (2007) 221-232. DOI:10.1016/j.jelechem.2006.02.024

P11.# **F. Maillard**, E. Peyrelade, Y. Soldo-Olivier, M. Chatenet, E. Chaînet, R. Faure, "Is carbon-supported Pt-WO_x composite a CO-tolerant material?", *Electrochim. Acta*, **52** (2007) 1958-1967. DOI: 10.1016/j.electacta.2006.08.024

P12. E. Guilminot, A. Corcella, M. Chatenet, **F. Maillard**, "Comparing the thin-film rotating disk electrode and the cavity microelectrode techniques to study carbon-supported platinum for PEMFC applications", *J. Electroanal. Chem*., **599** (2007) 111-120. DOI:10.1016/j.jelechem.2006.09.022

P13.# E. Guilminot, A. Corcella, F. Charlot, **F. Maillard**, M. Chatenet, "Detection of Pt^{z+} ions and Pt nanoparticles inside the membrane of a PEM fuel cell", *J. Electrochem. Soc*., **154** (2007) B96-B105. DOI: 10.1149/1.2388863

P14. E. Guilminot, A. Corcella, C. Iojoiu, F. Charlot, G. Berthomé, **F. Maillard**, M. Chatenet, J.-Y. Sanchez, E. Rossinot, E. Claude, "Membrane and active layer degradation upon Proton Exchange Membrane Fuel Cell steady-state operation – part I: platinum dissolution and redistribution within the Membrane Electrode Assembly", *J. Electrochem. Soc*., **154** (2007) B1106-B1114. DOI:10.1149/1.2775218

P15. C. Iojoiu, E. Guilminot, **F. Maillard**, M. Chatenet, J.-Y. Sanchez, E. Claude, E. Rossinot, "Membrane and active layer degradation upon Proton Exchange Membrane Fuel Cell steady-state operation – part II: Influence of Pt^{z+} on the PE membrane properties", *J. Electrochem. Soc*. **154** (2007) B1115-B1120. DOI:10.1149/1.2775282

P16.# **F. Maillard**, A. Bonnefont, M. Chatenet, L. Guétaz, B. Doisneau-Cottignies, H. Roussel, U. Stimming, "Effect of the structure of Pt-Ru/C particles on CO_{ad} monolayer vibrational properties and electrooxidation kinetics", *Electrochim. Acta*, **53** (2007) 811-822. DOI: 10.1016/j.electacta.2007.07.061

P17. F. Hahn, Y.-L. Mathis, A. Bonnefont, **F. Maillard** and C. A. Melendres, "*In situ* synchrotron far-infrared spectromicroscopy of a copper electrode at grazing incidence angle", *J. Synchrotron Radiat.* **14** (2007) 446-448. DOI: 10.1107/S0909049507029809

P18. M. Chatenet, E. Guilminot, C. Iojoiu, J.-Y. Sanchez, E. Rossinot, F. **Maillard**, "Pt redistribution within PEMFC MEAs and its consequence on their performances", *ECS Trans.,* **11** (2007) 1203-1214. DOI: 10.1149/1.2781034

P19. F. Hahn, Y.-L. Mathis, A. Bonnefont, **F. Maillard** and C.A. Melendres, "*In situ* synchrotron far infrared micro-spectroelectrochemistry with a grazing angle objective", *Infrared Physics & Technology*, **51** (2008) 446-449. DOI: 10.1016/j.infrared.2007.12.017

P20.# F. Micoud, **F. Maillard**, A. Gourgaud, M. Chatenet, "Unique CO-tolerance of Pt-WO_x materials", *Electrochem. Comm*. **11** (2009) 651-654. DOI: 10.1016/j.elecom.2009.01.007

P21. C. Lebouin, Y. Soldo-Olivier, E. Sibert, M. De Santis, **F. Maillard**, R. Faure, "Evidence of substrate effect in hydrogen electroinsertion into palladium atomic layers by means of *in situ* surface X-Ray diffraction", *Langmuir*, **25** (2009) 4251-4255. DOI: 10.1021/la803913e

P22. N. Job, **F. Maillard**, J. Marie, S. Berthon-Fabry, J.–P. Pirard, M. Chatenet, "Electrochemical characterization of Pt/carbon xerogel and Pt/carbon aerogel catalysts – first insights into the influence of the carbon texture on the Pt nanoparticles morphology and catalytic activity", *J. Mater. Sci.*, **44** (2009) 6591-6600. DOI: 10.1007/s10853-009-3581-x

P23. N. Job, S. Lambert, M. Chatenet, C.J. Gommes, **F. Maillard**, S. Berthon-Fabry, J.R. Regalbuto, J.-P Pirard, "Preparation of highly loaded Pt/carbon xerogel catalysts for Proton Exchange Membrane fuel cells by the Strong Electrostatic Adsorption method", *Catal. Today*, **150** (2010) 119-127. DOI:10.1016/j.cattod.2009.06.022

P24. M. Chatenet, L. Dubau, N. Job, **F. Maillard**, "The (electro)catalyst | membrane interface in the Proton Exchange Membrane Fuel Cell: similarities and differences with non-electrochemical Catalytic Membrane Reactors", *Catal. Today*, **156** (2010) 76-86. DOI: 10.1016/j.cattod.2010.02.028

P25.# E. Billy, **F. Maillard**, A. Morin, L. Guétaz, F. Emieux, C. Thurier, P. Doppelt, S. Donet, S. Mailley, "Impact of ultra-low Pt loadings on the performance of anode/cathode in a Proton Exchange Membrane Fuel Cell", *J. Power Sources*, **195** (2010) 2737–2746. DOI:10.1016/j.jpowsour.2009.10.101

P26.# F. Micoud, **F. Maillard**, A. Bonnefont, N. Job, M. Chatenet, "The role of the support in CO_{ads} monolayer electrooxidation on Pt nanoparticles: Pt/WO_x *vs.* Pt/C", *Phys. Chem. Chem. Phys*., **12** (2010) 1182-1193. DOI: 10.1039/B915244J

P27.# **F. Maillard**, L. Dubau, J. Durst, M. Chatenet, J. André, E. Rossinot, "On the durability of Pt_3Co/C particles in a proton-exchange membrane fuel cell: direct evidence of bulk Co segregation from the bulk to the surface", *Electrochem. Commun.,* **12** (2010) 1161-1164. DOI: 10.1016/j.elecom.2010.06.007

P28. B. Molina Concha, M. Chatenet, **F. Maillard**, E. A. Ticianelli, F. H. B. Lima, R. B. de Lima, "*In situ* Infrared (FTIR) study of the mechanism of the borohydride oxidation reaction"; *Phys. Chem. Chem. Phys.*, **12** (2010) 11507-11516. DOI: 10.1039/c003652h

P29. L. Dubau, **F. Maillard**, M. Chatenet, L. Guétaz, J. André, E. Rossinot, "Durability of Pt_3Co/C cathodes in a 16 cell PEMFC stack: macro and microstructural changes and degradation mechanisms", *J. Electrochem. Soc.,* **157** (2010) B1887-B1895. DOI: 10.1149/1.3485104

P30.# L. Dubau, **F. Maillard**, M. Chatenet, J. André, E. Rossinot, "Nanoscale compositional changes and modification of the surface reactivity of Pt3Co/C nanoparticles during proton-exchange membrane fuel cell operation", *Electrochim. Acta,* **56** (2010) 776–783. DOI: 10.1016/j.electacta.2010.09.038

P31.# L. Dubau, **F. Maillard**, M. Chatenet, J. André, E. Rossinot, "Durability of Pt_3Co/C Cathodes in a 16 Cell PEMFC Stack: Degradation Mechanisms and Modification of the ORR Electrocatalytic Activity", *ECS Trans*., **33** (2010) 407-417. DOI: 10.1149/1.3484539

P32. L. Dubau, **F. Maillard**, J. Durst, M. Chatenet, J. André, E. Rossinot, "Influence of PEMFC operating conditions on the durability of Pt_3Co/C electrocatalysts", *ECS Trans*., **33** (2010) 399-405. DOI: 10.1149/1.3484538

P33. J. Rooke, C. Matosa, R. Sescousse, T. Budtova, S. Berthon-Fabry, R. Mosdale, M. Chatenet, **F. Maillard**, "Elaboration and characterizations of platinum nanoparticles supported on cellulose-based carbon aerogel", *ECS Trans*., **33** (2010) 447-459. DOI: 10.1149/1.3484543

P34.# L. Dubau, J. Durst, **F. Maillard**, L. Guétaz, M. Chatenet, J. André, E. Rossinot, "Further insights into the durability of Pt_3Co/C electrocatalysts: Formation of Pt hollow nanoparticles from Pt_3Co/C during proton-exchange membrane fuel cell operation", *Electrochim. Acta, invited article,* **56** (2011) 10658-10667. DOI: 10.1016/j.electacta.2011.03.073.

P35. J. Rooke, C. de Matos Passos, M. Chatenet, R. Sescousse, T. Budtova, S. Berthon-Fabry, R. Mosdale, **F. Maillard**, "Synthesis and properties of platinum nanocatalyst supported on cellulose-based carbon aerogel for applications in PEMFCs", *J. Electrochem. Soc.*, **158** (2011) B779-B789. DOI: 10.1149/1.3585744

P36. E. Mayousse, **F. Maillard**, F. Fouda-Onana, O. Sicardy, N. Guillet, "Synthesis and characterization of electrocatalysts used for oxygen evolution in PEM water electrolysis", *Int. J. Hydrogen Energy*, *invited article*, **36** (2011) 10474. DOI:10.1016/j.ijhydene.2011.05.139

P37. L. Dubau, J. Durst, L. Guétaz, **F. Maillard**, M. Chatenet, J. André, E. Rossinot, "Heterogeneities of aging in proton-exchange membrane fuel cells", *ECS Trans,* **41** (2011) 827-836. DOI: 10.1149/1.3635616

P38. B. Vion-Dury, M. Chatenet, L. Guétaz, **F. Maillard**, "Determination of aging markers and their use as a tool to characterize Pt/C nanoparticles degradation mechanism in model PEMFC cathode environment"**,** *ECS Trans,* **41** (2011) 697-708. DOI: 10.1149/1.3635604

P39.# **F. Maillard**, A. Bonnefont, F. Micoud, "An EC-FTIR study on the catalytic role of Pt in carbon corrosion", *Electrochem. Commun.*, **13** (2011) 1109. DOI: 10.1016/j.elecom.2011.07.011

P40.# L. Dubau, J. Durst, **F. Maillard**, M. Chatenet, J. André, E. Rossinot, "Heterogeneities of aging within a PEMFC MEA", *Fuel Cells*, *invited article,* **12** (2012) 188-198. DOI: 10.1002/fuce.201100073

P41.# Z. Zhao, L. Dubau, **F. Maillard,** "Evidences of the migration of Pt crystallites on high surface area carbon supports in the presence of reducing molecules", *J. Power Sources,* **217** (2012) 449-458. DOI: 10.1016/j.jpowsour.2012.06.016

P42. L. Dubau, J. Durst, L. Guétaz, **F. Maillard**, M. Chatenet, J. André, E. Rossinot, "Evidences of "through-plane" heterogeneities of ageing in a proton-exchange membrane fuel cell", ECS *Electrochem. Lett.,* **1** (2012) F13-F15. DOI:10.1149/2.011202eel

P43.# J. Durst, M. Chatenet, **F. Maillard**, "Impact of metal cations on the electrocatalytic properties of Pt/C nanoparticles at multiple phase interfaces", *Phys. Chem. Chem. Phys.,* **14** (2012) 13000-13009. DOI:10.1039/C2CP42191G

P44. Z. Zhao, L. Castanheira, L. Dubau, G. Berthomé, A. Crisci, **F. Maillard**, "Carbon corrosion and platinum nanoparticles ripening under open circuit potential conditions", *J. Power Sources*, **203** (2013) 236-243. DOI: 10.1016/j.jpowsour.2012.12.053

P45. J. Durst, A. Lamibrac, F. Charlot, J. Dillet, L.F. Castanheira, G. Maranzana, L. Dubau, **F. Maillard**, M. Chatenet, O. Lottin, "Degradation heterogeneities induced by repetitive start/stop events in proton exchange membrane fuel cell: Inlet vs. outlet and channel vs. land", *Appl. Catal. B.*, **138-139** (2013) 416-426. DOI: 10.1016/j.apcatb.2013.03.021

P46. N. Job, M. Chatenet, S. Berthon-Fabry, S. Hermans, **F. Maillard,** "Efficient Pt/carbon electrocatalysts for Proton Exchange Membrane fuel cells: avoid chloride-based Pt salts!", *J. Power Sources*, **240** (2013) 294-305. DOI: 10.1016/j.jpowsour.2013.03.188

P47. # L. Dubau, L. Castanheira, G. Berthomé, **F. Maillard**, "An identical-location transmission electron microscopy study on the degradation of Pt/C nanoparticles under oxidizing, reducing and neutral atmosphere", *Electrochim. Acta*, *invited article,* **110** (2013) 273-281. DOI: 10.1016/j.electacta.2013.03.184

P48. # M. El-Jawad, J.-L. Chemin, B. Gilles, **F. Maillard**, "A portable transfer chamber for electrochemical measurements on electrodes prepared in ultra-high vacuum", *Rev. Sci. Inst.*, **84** (2013) 064101. DOI: 10.1063/1.4809936

P49. Y. Soldo-Olivier, E. Sibert, B. Previdello, M. C. Lafouresse, **F. Maillard**, M. De Santis, "H-electro-insertion into Pd/Pt(111) nanofilms: an original method for isotherm measurement coupled to *in situ* surface X-ray diffraction structural study", *Electrochim. Acta*., **112** (2013) 905-9012. DOI: 10.1016/j.electacta.2013.06.095

P50.# L. Dubau, M. Lopez-Haro, L. Castanheira, J. Durst, M. Chatenet, L. Guétaz, P. Bayle-Guillemaud, N. Caqué, E. Rossinot, **F. Maillard**, "Probing the structure, the composition and the ORR activity of Pt_3Co/C nanocrystallites during a 3422 h PEMFC ageing test", *Appl. Catal. B.*, **142-143** (2013) 801-808. DOI: 10.1016/j.apcatb.2013.06.011

P51.# M. Lopez-Haro, L. Dubau, L. Castanheira, J. Durst, M. Chatenet, P. Bayle-Guillemaud, L. Guétaz, **F. Maillard**, "Pt_3Co nanoparticles and carbon to the test of PEMFC operation", *ECS Trans*., **58** (2013) 937-943. DOI: 10.1149/05801.0937ecst

P52.# L. Castanheira, L. Dubau, **F. Maillard**, "Accelerated stress tests of Pt/HSAC electrocatalysts: an identical-location transmission electron microscopy study on the influence of intermediate characterizations", *Electrocatalysis*, **5** (2014) 125-135. DOI: 10.1007/s12678-013-0173-y

P53.# L. Dubau, L. Castanheira, **F. Maillard,** M. Chatenet, O. Lottin, G. Maranzana, J. Dillet, A. Lamibrac, J.-C. Perrin, E. Moukheiber, A. Elkaddouri, G. De Moor, C. Bas, L. Flandin, N. Caqué, **"**A review of PEM fuel cell durability: materials degradation, local heterogeneities of aging and possible mitigation strategies", *Wiley Interdisciplinary Reviews: Energy and Environment, invited article,* 3 (2014) 540-560. DOI: 10.1002/wene.113

P54. C. Cao, G. Yang, L. Dubau, **F. Maillard**, S. D. Lambert, J.-P. Pirard, N. Job, "Highly dispersed Pt/C catalysts prepared by the charge enhanced dry impregnation method", *Appl. Catal. B.* **150-151** (2014) 101-106. DOI: 10.1016/j.apcatb.2013.12.004

P55.# J. Durst, M. Lopez-Haro, L. Guétaz, P. Bayle-Guillemaud, L. Dubau, M. Chatenet, Y. Soldo-Olivier, **F. Maillard**, "Reversibility of Pt-skin and Pt-skeleton nanostructures in acidic media", *J. Phys. Chem. Lett.* **5** (2014) 434-439. DOI: 10.1021/jz4025707

P56.# M. Lopez-Haro, L. Dubau, L. Guétaz, P. Bayle-Guillemaud, M. Chatenet, J. André, N. Caqué, E. Rossinot, **F. Maillard**, "Atomic-scale structure and composition of Pt_3Co/C nanocrystallites during real PEMFC operation: A STEM–EELS study", *Appl. Catal. B*. **152-153** (2014) 300-308. DOI: 10.1016/j.apcatb.2014.01.034

P57. A. Zubiaur, M. Chatenet, **F. Maillard**, S. Lambert, J.-P. Pirard, N. Job, "Using the multiple SEA method to synthesize Pt/carbon xerogel electrocatalysts for PEMFC applications", *Fuel Cells,* invited article, **14** (2014) 343-349. DOI: 10.1002/fuce.201300208

P58. F.R. Nikkuni, B. Vion-Dury , L. Dubau, **F. Maillard**, E.A. Ticianelli, M. Chatenet, "The role of water in the degradation of Pt_3Co/C nanoparticles: An identical location transmission electron microscopy study in polymer electrolyte environment", *Appl. Catal. B.,* **156-157C** (2014) 301-306. DOI: 10.1016/j.apcatb.2014.03.029

P59.# L. Castanheira, L. Dubau, M. Mermoux, G. Berthomé, N. Caqué, E. Rossinot, M. Chatenet, **F. Maillard**, "Carbon corrosion in proton-exchange membrane fuel cells: From model experiments to real-life operation in membrane electrode assemblies", *ACS Catal.*, **4** (2014) 2258-2267. DOI: 10.1021/cs500449q

P60. L. Dubau, L. Castanheira, M. Chatenet, **F. Maillard**, J. Dillet, O. Lottin, G. De Moor, C. Bas, L. Flandin, E. Rossinot, N. Caqué, "Carbon corrosion induced by membrane failure: the weak link of PEMFC long term performance", *Int. J. Hydrogen Energy*, invited article **39** (2014) 21902–21914. DOI: 10.1016/j.ijhydene.2014.07.099.

P61.# L. Dubau, M. Lopez-Haro, J. Durst, L. Guétaz, P. Bayle-Guillemaud, M. Chatenet, **F. Maillard, "**Beyond conventional electrocatalysts: Hollow nanoparticles for improved and sustainable oxygen reduction reaction activity", *J. Mater. Chem. A*. **2** (2014) 18497-18507. DOI: 10.1039/C4TA03975K.

P62.# L. Castanheira, W.O. Silva, F.H. Lima, A. Crisci, L. Dubau, **F. Maillard, "**Carbon Corrosion in Proton-Exchange Membrane Fuel Cells: Effect of the Carbon Structure, the Degradation Protocol and the Gas Atmosphere", *ACS Catal*. **5** (2015) 2184-2194. DOI: 10.1021/cs501973j

P63.# M. El-Jawad, B. Gilles, **F. Maillard**, "Structure and surface reactivity of ultra-thin Pt/W(111) films", *Electrocatalysis*, **6** (2015) 398-404. DOI: 10.1007/s12678-015-0260-3

P64.# L. Dubau, T. Asset, C. Bonnaud, R. Chattot, V. van Peene, J. Nelayah, **F. Maillard**, "Tuning the performance and the stability of hollow nanostructures for the oxygen reduction reaction", *ACS Catal.*, **5** (2015) 5333-5341. DOI: 10.1007/s12678-015-0260-3

P65. A. Serov, N.I. Andersen, S. Kabir, A. Roy, T. Asset, M. Chatenet, **F. Maillard**, P. Atanassov, "Pd supported on 3D graphene as an active catalyst for alcohols electrooxidation", *J. Electrochem. Soc.*, **162** (2015) F1305-F1309. DOI : 10.1149/2.0301512jes

P66. L. Dubau, J. Durst, L. Castanheira, **F. Maillard**, A. Lamibrac, J. Dillet, G. Maranzana, O. Lottin, A. El Kaddouri, G. de Moor, C. Bas, L. Flandin, E. Rossinot, N. Caqué, M. Chatenet, "Various scales of aging heterogeneities upon PEMFC operation – A link between local MEA materials degradation and the cell performance", *ECS Trans.*, **69** (2015) 133-146. DOI : 10.1149/06917.0133ecst

P67. G. Ozouf, G. Cognard, **F. Maillard**, L. Guétaz, M. Heitzmann, C. Beauger, "SnO_2 Aerogels: Towards Performant and Stable PEFC Catalyst Supports", *ECS Trans*., **69** (2015) 1207-1220. DOI : 10.1149/06917.1207ecst

P68.# L. Dubau, M. Lopez-Haro, J. Durst, **F. Maillard**, "Atomic-scale restructuring of hollow PtNi/C electrocalysts during accelerated stress tests", *Catal. Today*, invited article, **262** (2016) 146-154. DOI: 10.1016/j.cattod.2015.08.011.

P69. A. Bach Delpeuch, **F. Maillard**, M. Chatenet, C. Cremers, "Ethanol oxidation reaction (EOR) investigation on Pt/C, Rh/C, and Pt-based bi- and tri-metallic electrocatalysts: a DEMS and FTIR study", *Appl. Catal. B*., **181** (2016) 672-680. DOI: 10.1016/j.apcatb.2015.08.041

P70.# L. Dubau, **F. Maillard**, "Unveiling the crucial role of temperature on the stability of oxygen reduction reaction electrocatalysts", *Electrochem. Commun*., **63** (2016) 65-69. DOI: 10.1016/j.elecom.2015.12.011

P71. A. Serov, T. Asset, M. Padilla, A. J. Roya, I. Matanovica, U. Martineza, M. Chatenet, **F. Maillard**, D. Bayer, C. Cremers, P. Atanassov, "Highly -Active Pd-Cu Catalysts for Oxidation of Ubiquitous Oxygenated Fuels", *Appl. Cat. B*., **191** (2016) 76-85. DOI: 10.1016/j.apcatb.2016.03.016

P72.# L. Dubau, S. Moldovan, O. Ersen, J. Nelayah, P. Bordet, J. Drnec, T. Asset, R. Chattot, **F. Maillard**, "Defects do Catalysis: CO Monolayer Oxidation and Oxygen Reduction Reaction on Hollow PtNi/C Nanoparticles", *ACS Catal*. **6** (2016) 4673−4684. DOI: 10.1021/acscatal.6b01106

P73.# T. Asset, R. Chattot, J. Nelayah, N. Job, L. Dubau, **F. Maillard**, "Structure – Oxygen Reduction Reaction Activity Relationships in Porous Hollow PtNi/C Nanoparticles", *ChemElectroChem*, invited article, **3** (2016) 1591-1600. DOI: 10.1002/celc.201600300

P74. T. Asset, A. Roy, T. Sakamoto, M. Padilla, I. Matanovic, K. Artyushkova, A. Serov, **F. Maillard**, M. Chatenet, K. Asazawa, H. Tanaka, P. Atanassov, "Highly active and selective nickel molybdenum catalysts for direct hydrazine fuel cell", *Electrochim. Acta*, **215** (2016) 420-426. DOI: 10.1016/j.electacta.2016.08.106

P75.# G. Cognard, G. Ozouf, C. Beauger, G. Berthomé, D. Riasetto, L. Dubau, R. Chattot, M. Chatenet, **F. Maillard**, "Benefits and limitations of Pt nanoparticles supported on highly porous antimony-doped tin dioxide aerogel as alternative cathode material for proton-exchange membrane fuel cells", *Appl. Cat. B*., **201** (2017) 381-390. DOI: 10.1016/j.apcatb.2016.08.010

P76.# G. Cognard, G. Ozouf, C. Beauger, I. Jiménez-Morales, S. Cavaliere, D. Jones, J. Rozière, M. Chatenet, **F. Maillard**, "Pt nanoparticles supported on niobium-doped tin dioxide: impact of the support morphology on Pt utilization and electrocatalytic activity", *Electrocatalysis*, **8**(1) (2017) 51-58. DOI: 10.1007/s12678-016-0340-z

P77.# R. Chattot, T. Asset, P. Bordet, J. Drnec, L. Dubau, **F. Maillard**, "Beyond strain and ligand effects: Microstrain-induced enhancement of the oxygen reduction reaction kinetics on various PtNi/C nanostructures", *ACS Catal.*, **7** (1) (2017) 398-408. DOI: 10.1021/acscatal.6b01106

P78.# O. Le Bacq, A. Pasturel, R. Chattot, B. Previdello, J. Nelayah, T. Asset, L. Dubau, **F. Maillard**, "Effect of Atomic Vacancies on the Structure and the Electrocatalytic Activity of Pt-rich/C Nanoparticles: A Combined Experimental and Density Functional Theory Study", *ChemCatChem*, invited article **9** (2017) 2324-2338. DOI: 10.1002/cctc.201601672.

P79.# L. Dubau, J. Nelayah, T. Asset, R. Chattot, **F. Maillard**, "Implementing Structural Disorder as a Promising Direction for Improving the Durability of PtNi/C Nanoparticles", *ACS Catal.* 7 (4) (2017) 3072-3081. DOI: 10.1021/acscatal.7b00410

P80.# R. Chattot, T. Asset, J. Drnec, P. Bordet, J. Nelayah, L. Dubau, **F. Maillard**, "Atomic Scale Snapshots of the Formation and Growth of Hollow PtNi/C Nanocatalysts", *Nano Lett.*, **17** (4) (2017) 2447-2453. DOI: 10.1021/acs.nanolett.7b00119

P81. M. Lions, J.-B. Tommasino, R. Chattot, B. Abeykoon, N. Guillou, T. Devic, A. Cardenas, **F. Maillard**, A. Fateeva, "Insights into the mechanism of electrocatalysis of oxygen reduction reaction by a porphyrinic metal organic framework ", *Chem. Commun*., 583 (2017) 6496-6499. DOI: doi.org/10.1039/c7cc02113e

P82.# M. El-Jawad, B. Gilles, **F. Maillard**, Stability of Nanopyramids of Pt/W(111) in Sulfuric Acid Medium", *Key Engineering Materials*, 735 KEM, 219-224. DOI : 10.4028/www.scientific.net/KEM.735.219.

P83.# G. Cognard, G. Ozouf, C. Beauger, L. Dubau, M. López-Haro, M. Chatenet, **F. Maillard**, "Insights into the stability of Pt nanoparticles supported on antimony-doped and niobium-doped tin dioxide in different potential ranges", *Electrochim. Acta,* **245** (2017) 993–1004. DOI: 10.1016/j.electacta.2017.05.178

P84. T. Asset, R. Chattot, J. Drnec, P. Bordet, N. Job, **F. Maillard**, L. Dubau, "Elucidating the mechanisms driving the ageing of porous hollow PtNi/C nanoparticles by the means of CO_{ads} stripping", *ACS Appl. Mater. Interf*., **9** (30) (2017) 25298–25307. DOI: 10.1021/acsami.7b05782

P85.# T. Asset, R. Chattot, O. Le Bacq, A. Pasturel, J. Drnec, P. Bordet, J. Nelayah, L. Dubau, **F. Maillard**, "Porous Hollow PtNi/C Nanoparticles and Their Many Facets", *ECS Trans*., **80** (8) (2017) 731-741. DOI: 10.1021/10.1149/08008.0731ecst

P86.# T. Asset, N. Job, Y. Busby, A. Crisci, V. Martin, V. Stergiopoulos, C. Bonnaud, A. Serov, M. Fontana, B. Mercier-Guyon, V. Martin, R. Chattot, N. Job, L. Dubau, **F. Maillard**, "Porous Hollow PtNi/C Electrocatalysts: Carbon Support Considerations to Meet Performance and Stability Requirements", *ACS Catal*.**, 8** (2018) 893-903. DOI: 10.1021/acscatal.7b03539

P87. T. Asset, A. Serov, T. M. Padilla, A. J. Roy, I. Matanovic, M. Chatenet, **F. Maillard**, P. Atanassov, "Design of Pd-Pb catalysts for glycerol and ethylene glycol electrooxidation in alkaline medium", *Electrocatalysis*, **9 (**4) (2018) 480-485. DOI: 10.1007/s12678-017-0449-8

P88. G. Ozouf, G. Cognard, **F. Maillard**, M. Chatenet, L. Guétaz, M. Heitzmann, P.-A. Jacques, C. Beauger, "Sb-Doped SnO_2 Aerogels Based Catalysts for Proton Exchange Membrane Fuel Cells: Pt Deposition Routes, Electrocatalytic Activity and Durability", *J. Electrochem. Soc*., **165** (6) (2018) F3036-F3044. DOI: 10.1149/2.0041806jes

P89. C. Lafforgue, A. Zadick, L. Dubau**, F. Maillard**, M. Chatenet, "Selected review of the degradation of Pt and Pd-based carbon-supported electrocatalysts for alkaline fuel cells: towards mechanisms of degradation", *Fuel Cells*, **18** (3) (2018) 229-238, invited article. DOI: 10.1002/fuce.201700094

P90.# T. Asset, M. Fontana, B. Mercier-Guyon, R. Chattot, N. Job, L. Dubau, **F. Maillard**, "A Review on Recent Developments and Prospects for Oxygen Reduction Reaction on Hollow Pt-alloy Nanoparticles", *ChemPhysChem*., **19** (2018) 1552-1567. DOI: 10.1002/cphc.201800153

P91. T. Asset, R. Chattot**, F. Maillard**, L. Dubau, Y. Ahmad, N. Batisse, M. Dubois, K. Guérin, F. Labbé, R. Metkemeijer, S. Berthon-Fabry, M. Chatenet, "Activity and durability of platinum-based electrocatalysts supported on bare or fluorinated nanostructured carbon substrates", *J. Electrochem. Soc*., **165** (6) (2018) F3346-F3358. DOI: 10.1149/2.031806jes

P92. F. Labbé, E. Disa, Y. Ahmad, K. Guérin, T. Asset, **F. Maillard**, M. Chatenet, R. Metkemeijer, S. Berthon-Fabry, "Tin dioxide coated carbon materials as an alternative catalyst support for PEMFCs: impacts of the intrinsic carbon properties and the synthesis parameters on the coating characteristics", *Microporous and Mesoporous Mater*. **271** (2018) 1-15. DOI: 10.1016/j.micromeso.2018.05.019

P93.# R. Chattot, O. Le Bacq, V. Beermann, S. Kühl, J. Herranz, S. Henning, L. Kühn, T. Asset, L. Guétaz, G. Renou, J. Drnec, P. Bordet, A. Pasturel, A. Eychmüller, T. J. Schmidt, P. Strasser, L. Dubau, **F. Maillard**, "Surface Distortion as a Unifying Concept and Descriptor in Oxygen Reduction Reaction Electrocatalysis", *Nat. Mater*. **17** (2018) 827-833. DOI: 10.1038/s41563-018-0133-2

P94. J. L. Bott-Neto, T. Asset, **F. Maillard**, L. Dubau, Y. Ahmad, K. Guérin, S. Berthon-Fabry, A. Mosdale, R. Mosdale, E.A. Ticianelli, Marian Chatenet, "Utilization of graphitized and fluorinated carbon as platinum nanoparticles supports for application in proton exchange membrane fuel cell cathodes", *J. Power Sources* **404** (2018) 28-38. DOI: 10.1016/j.jpowsour.2018.10.004

P95.# K. Kumar, P. Gairola, M. Lions, N. Ranjbar-Sahraie, M. Mermoux, L. Dubau, A. Zitolo, F. Jaouen, **F. Maillard**, "Physical and Chemical Considerations for Improving Catalytic Activity

and Stability of Non-Precious Metal Oxygen Reduction Reaction Catalysts", *ACS Catal*. **8** (2018) 11264-11276. DOI: 10.1021/acscatal.8b02934

P96. T. Asset, C. J. Gommes, J. Drnec, P. Bordet, R. Chattot, I. Martens, J. Nelayah, N. Job, **F. Maillard**, L. Dubau, "Disentangling the Degradation Pathways of Highly Defective PtNi/C Nanostructures – An *Operando* Wide and Small Angle X-Ray Scattering Study", *ACS Catal*. **9** (2019) 160-167. DOI: 10.1021/acscatal.8b02665

P97. J. Fichtner, B Garlyyev, S. Watzele, H. A. El-Sayed, J. N. Schwämmlein, W. J. Li, **F. Maillard**, L. Dubau, J. Macák, A. Holleitner, A. S. Bandarenka, "Top-Down Synthesis of Nanostructured Platinum-Lanthanide Alloy Oxygen Reduction Reaction Catalysts: Pt_xPr/C as an Example", *ACS Appl. Mater. Interf*. **11** (2019) 5129-5135. DOI: 10.1021/acsami.8b20174