olivier.guaitella@polytechnique.edu

Olivier Guaitella, PhD

39 years old
Tel : + 33 1 69 33 59 48
Laboratoire de Physique des Plasmas (LPP)
Ecole Polytechnique
91128 Palaiseau cedex
FRANCE

Education

- 2006 : PhD from Ecole Polytechnique in Plasmas Physics
- 2003 : Master of fundamental physic – Orsay University (Paris)
- 2000 : Preparation School for High School competitive exams – Lycée du Parc (Lyon)

Experience and current projects

Since 2007 : Researcher at Plasma Physics Laboratory (LPP) from Ecole Polytechnique

- 2016-2020: PI ANR Jeune Chercheur SYCAMORE (255 k€): surface kinetics of CO2 containing plasmas
- 2015-2020: LabeX Plas@par fundings (70 k€)
- 2015-2019: Partner of ANR Project ValCO2Plas (55k€) (gas reforming by plasma)
- 2014: 1 year mobility convention from Ecole Polytechnique: promoting collaboration with TUe Eindhoven
- 2013-2016: PI of AIRCLEAN (80k€), Essonne Region ASTRE, Air treatment by plasma/catalyst coupling
- currently co-supervisor of 6 PhD students

Scientific expertise

- ***Plasma physics:*** filamentary discharges physic, surface reactivity, plasma-catalyst coupling for air treatment and molecule synthesis, guided streamers for biomedical applications, plasma in liquid phase
- ***Diagnostic skills:*** IR absorption spectroscopy (FTIR, TDLAS, QCL and OFCEAS), fast imaging, mass spectrometry, emission spectroscopy

Collaborations and networking

- since 2015: Expert adviser of PREMiERE project led by Pr V; Guerra, IST Lisboa (Portugal)
- since 2014: Collaboration with Pr. R. Engeln, 1 year visiting position in PMP group from TUe Eindhoven
- since 2013: Collaboration with Pr. A. Sobota from TUe Eindhoven (currently co-supervision of 2 PhDs)
- 2013-2019: member steering committee of French Non Thermal Plasma Network (//plasmasfroids.cnrs.fr)
- 2015-17: PI french side of PHC Van Gogh bilateral project with R. Van De Sanden (DIFFER, Eindhoven)

Communications

- 58 peer reviewed internationnal publications
- 2 patents
- > 20 invited talks in international conferences and more than 200 other communications

Teaching

- Since 2014: Chairman (2017-18), & lecturer of Internationnal Plasma Summer School, Bad Honnef, Germany
- Since 2013: lecturer at Internationnal Summer School of Plas@Par in Banyuls
- 2013 : Jury member for 4 phD defenses
- Since 2003 : 9 formal co-supervision of PhDs, involved in 6 other PhDs, > 25 master students

Conferences organisation

- 2013 Co-founder of the Workshop Cloud Manager, online system (https://www.erudicio.com/wcm/)
- 2012 LOC Secretary of 5th International workshop on Plasma Spectroscopy (IPS 2012)
- 2010 LOC member of 63rd Gaseous Electronic Conference from American Physical Society (63rd GEC)

Miscellaneous

- English (fluent), German (basics)
- Associate in ERUDICIO company, e-learning and web solutions
- Final diploma of classical guitar and chamber music from National Conservatory of Lyon

Patents

[1] Guaitella Olivier, Rousseau Antoine, Youssef Joseph. Système de traitement d'air / Air treatment system. (WO 2012127169) (2012) publication date: 27^{th} september 2012

[2] Allegraud Katia, Guaitella Olivier, Rousseau Antoine. Traitement de gaz par plasma de surface / Surface plasma gas processing. (WO 2009007588) (2009) publication date: 15^{th} january 2009

References

[1] A Rousseau, O Guaitella, J Röpcke, LV Gatilova, and YA Tolmachev. Combination of a pulsed microwave plasma with a catalyst for acetylene oxidation. *Applied physics letters*, 85(12):2199–2201, 2004. 1

[2] O Guaitella, L Gatilova, and A Rousseau. Plasma-photocatalyst interaction: Production of oxygen atoms in a low pressure discharge. *Applied Physics Letters*, 86(15):151502, 2005. 1

[3] F Thevenet, O Guaitella, JM Herrmann, A Rousseau, and C Guillard. Photocatalytic degradation of acetylene over various titanium dioxide-based photocatalysts. *Applied Catalysis B: Environmental*, 61(1):58–68, 2005. 1

[4] A Rousseau, O Guaitella, L Gatilova, F Thevenet, C Guillard, J Röpcke, and GD Stancu. Photocatalyst activation in a pulsed low pressure discharge. *Applied Physics Letters*, 87(22):221501, 2005. 1

[5] O Guaitella, F Thevenet, C Guillard, and A Rousseau. Dynamic of the plasma current amplitude in a barrier discharge: influence of photocatalytic material. *Journal of Physics D: Applied Physics*, 39(14):2964, 2006. 1

[6] K Allegraud, O Guaitella, and A Rousseau. Spatio-temporal breakdown in surface dbds: evidence of collective effect. *Journal of Physics D: Applied Physics*, 40(24):7698, 2007. 1

[7] A Rousseau, O Guaitella, L Gatilova, M Hannemann, and J Röpcke. Measurement of the c2h2 destruction kinetics by infrared laser absorption spectroscopy in a pulsed low pressure dc discharge. *Journal of Physics D: Applied Physics*, 40(7):2018, 2007. 1

[8] F Thevenet, O Guaitella, E Puzenat, J-M Herrmann, A Rousseau, and C Guillard. Oxidation of acetylene by photocatalysis coupled with dielectric barrier discharge. *Catalysis Today*, 122(1):186–194, 2007. 1

[9] F Thevenet, O Guaitella, C Guillard, E Puzenat, G Stancu, J Roepcke, and A Rousseau. Comparison of the plasma-photocatalyst synergy at low and atmospheric pressure. *Int. J. Plasma Environ. Sci. Technol*, 1(1):52–56, 2007. 1

[10] Sébastien Célestin, G Canes-Boussard, Olivier Guaitella, Anne Bourdon, and Antoine Rousseau. Influence of the charges deposition on the spatio-temporal self-organization of streamers in a dbd. *Journal of Physics D: Applied Physics*, 41(20):205214, 2008. 1

[11] Sebastien Celestin, Katia Allegraud, Gregoire Canes-Boussard, Noemi Leick, Olivier Guaitella, and Antoine Rousseau. Patterns of plasma filaments propagating on a dielectric surface. *IEEE Transactions on Plasma Science*, 36(4):1326–1327, 2008. 1

[12] O Guaitella, F Thevenet, E Puzenat, C Guillard, and A Rousseau. C 2 h 2 oxidation by plasma/tio 2 combination: influence of the porosity, and photocatalytic mechanisms under plasma exposure. *Applied Catalysis B: Environmental*, 80(3):296–305, 2008. 1

[13] J Röpcke, S Welzel, N Lang, F Hempel, L Gatilova, O Guaitella, A Rousseau, and PB Davies. Diagnostic studies of molecular plasmas using mid-infrared semiconductor lasers. *Applied Physics B: Lasers and Optics*, 92(3):335–341, 2008. 1

[14] F Thevenet, O Guaitella, E Puzenat, C Guillard, and A Rousseau. Influence of water vapour on plasma/photocatalytic oxidation efficiency of acetylene. *Applied Catalysis B: Environmental*, 84(3):813–820, 2008. 1

[15] C Lazzaroni, X Aubert, D Marinov, O Guaitella, G Stancu, S Welzel, A Pipa, J Ropcke, N Sadeghi, and A Rousseau. Microplasmas and micro-jets. *Publ Astron Obs Belgrade*, 84:248–249, 2008. 1

[16] Sébastien Célestin, Zdenek Bonaventura, Olivier Guaitella, Antoine Rousseau, and Anne Bourdon. Influence of surface charges on the structure of a dielectric barrier discharge in air at atmospheric pressure: experiment and modeling. *The European Physical Journal-Applied Physics*, 47(2), 2009. 1

[17] CD Pintassilgo, Olivier Guaitella, and Antoine Rousseau. Heavy species kinetics in low-pressure dc pulsed discharges in air. *Plasma Sources Science and Technology*, 18(2):025005, 2009. 1

[18] PH Ceccato, O Guaitella, M Rabec Le Gloahec, and A Rousseau. Time-resolved nanosecond imaging of the propagation of a corona-like plasma discharge in water at positive applied voltage polarity. *Journal of Physics D: Applied Physics*, 43(17):175202, 2010. 1

[19] Olivier Guaitella, Claudia Lazzaroni, Daniil Marinov, and Antoine Rousseau. Evidence of atomic adsorption on tio 2 under plasma exposure and related c 2 h 2 surface reactivity. *Applied Physics Letters*, 97(1):011502, 2010. 1

[20] O Guaitella, M Hübner, S Welzel, D Marinov, J Röpcke, and A Rousseau. Evidence for surface oxidation on pyrex of no into no2 by adsorbed o atoms. *Plasma Sources Science and Technology*, 19(4):045026, 2010. 1

[21] Daniil Marinov, Olivier Guaitella, Antoine Rousseau, and Yuri Ionikh. Production of molecules on a surface under plasma exposure: example of no on pyrex. *Journal of Physics D: Applied Physics*, 43(11):115203, 2010. 1

[22] CD Pintassilgo, V Guerra, O Guaitella, and A Rousseau. Modelling of an afterglow plasma in air produced by a pulsed discharge. *Plasma Sources Science and Technology*, 19(5):055001, 2010. 1

[23] SM Starikovskaia, K Allegraud, O Guaitella, and A Rousseau. On electric field measurements in surface dielectric barrier discharge. *Journal of Physics D: Applied Physics*, 43(12):124007, 2010. 1

[24] Olivier Guaitella, M Hübner, Daniil Marinov, V Guerra, CD Pintassilgo, S Welzel, J Röpcke, and Antoine Rousseau. Oxidation of no into no2 by surface adsorbed o atoms. *Contributions to Plasma Physics*, 51(2-3):176–181, 2011. 1

[25] Olivier Guaitella, Ilya Marinov, and Antoine Rousseau. Role of charge photodesorption in self-synchronized breakdown of surface streamers in air at atmospheric pressure. *Applied Physics Letters*, 98(7):071502, 2011. 1

[26] M Hübner, S Welzel, Daniil Marinov, Olivier Guaitella, S Glitsch, Antoine Rousseau, and J Röpcke. Triple q: a three channel quantum cascade laser absorption spectrometer for fast multiple species concentration measurements. *Review of Scientific Instruments*, 82(9):093102, 2011. 1

[27] Ilya L Marinov, Olivier Guaitella, Antoine Rousseau, and Svetlana M Starikovskaia. Successive nanosecond discharges in water. *IEEE Transactions on Plasma Science*, 39(11):2672–2673, 2011. 1

[28] S Welzel, O Guaitella, C Lazzaroni, CD Pintassilgo, A Rousseau, and J Röpcke. No kinetics in pulsed low-pressure plasmas studied by time-resolved quantum cascade laser absorption spectroscopy. *Plasma Sources Science and Technology*, 20(1):015020, 2011. 1

[29] D Marinov, O Guaitella, JP Booth, and A Rousseau. Direct observation of ozone formation on sio2 surfaces in o2 discharges. *Journal of Physics D: Applied Physics*, 46(3):032001, 2012. 1

[30] M Hübner, D Marinov, O Guaitella, A Rousseau, and J Röpcke. On time resolved gas temperature measurements in a pulsed dc plasma using quantum cascade laser absorption spectroscopy. *Measurement Science and Technology*, 23(11):115602, 2012. 1

[31] D Marinov, D Lopatik, O Guaitella, M Hübner, Y Ionikh, J Röpcke, and A Rousseau. Surface vibrational relaxation of n2 studied by co2 titration with time-resolved quantum cascade laser absorption spectroscopy. *Journal of Physics D: Applied Physics*, 45(17):175201, 2012. 1

[32] M Dang Van Sung Mussard, O Guaitella, and A Rousseau. Propagation of plasma bullets in helium within a dielectric capillary: influence of the interaction with surfaces. *Journal of Physics D: Applied Physics*, 46(30):302001, 2013. 1

[33] Marko Huebner, Olivier Guaitella, Antoine Rousseau, and Juergen Roepcke. A spectroscopic study of ethylene destruction and by-product generation using a three-stage atmospheric packed-bed plasma reactor. *Journal of Applied Physics*, 114(3):033301, 2013. 1

[34] D Lopatik, D Marinov, O Guaitella, A Rousseau, and J Röpcke. On the reactivity of plasma-treated photo-catalytic tio2 surfaces for oxidation of c2h2 and co. *Journal of Physics D: Applied Physics*, 46(25):255203, 2013. 1

[35] Daniil Marinov, Vasco Guerra, Olivier Guaitella, Jean-Paul Booth, and Antoine Rousseau. Ozone kinetics in low-pressure discharges: vibrationally excited ozone and molecule formation on surfaces. *Plasma Sources Science and Technology*, 22(5):055018, 2013. 1

[36] I Marinov, O Guaitella, A Rousseau, and SM Starikovskaia. Modes of underwater discharge propagation in a series of nanosecond successive pulses. *Journal of Physics D: Applied Physics*, 46(46):464013, 2013. 1

[37] I Marinov, O Guaitella, A Rousseau, and SM Starikovskaia. Cavitation in the vicinity of the high-voltage electrode as a key step of nanosecond breakdown in liquids. *Plasma Sources Science and Technology*, 22(4):042001, 2013. 1

[38] A Sobota, Olivier Guaitella, and Enric Garcia-Caurel. Experimentally obtained values of electric field of an atmospheric pressure plasma jet impinging on a dielectric surface. *Journal of Physics D: Applied Physics*, 46(37):372001, 2013. 1

[39] Christelle Barakat, Paul Gravejat, Olivier Guaitella, Frédéric Thévenet, and Antoine Rousseau. Oxidation of isopropanol and acetone adsorbed on tio 2 under plasma generated ozone flow: Gas phase and adsorbed species monitoring. *Applied Catalysis B: Environmental*, 147:302–313, 2014. 1

[40] Vasco Guerra, Daniil Marinov, Olivier Guaitella, and Antoine Rousseau. No oxidation on plasma pretreated pyrex: the case for a distribution of reactivity of adsorbed o atoms. *Journal of Physics D: Applied Physics*, 47(22):224012, 2014. 1

[41] D Marinov, O Guaitella, T de los Arcos, A von Keudell, and A Rousseau. Adsorption and reactivity of nitrogen atoms on silica surface under plasma exposure. *Journal of Physics D: Applied Physics*, 47(47):475204, 2014. 1

[42] D Marinov, D Lopatik, O Guaitella, Y Ionikh, J Röpcke, and A Rousseau. Surface deactivation of vibrationally excited n2 studied using infrared titration combined with quantum cascade laser absorption spectroscopy. *Journal of Physics D: Applied Physics*, 47(1):015203, 2013. 1

[43] CD Pintassilgo, V Guerra, O Guaitella, and A Rousseau. Study of gas heating mechanisms in millisecond pulsed discharges and afterglows in air at low pressures. *Plasma Sources Science and Technology*, 23(2):025006, 2014. 1

[44] A Sobota, O Guaitella, and A Rousseau. The influence of the geometry and electrical characteristics on the formation of the atmospheric pressure plasma jet. *Plasma Sources Science and Technology*, 23(2):025016, 2014. 1

[45] F Thevenet, L Sivachandiran, O Guaitella, C Barakat, and A Rousseau. Plasma–catalyst coupling for volatile organic compound removal and indoor air treatment: a review. *Journal of Physics D: Applied Physics*, 47(22):224011, 2014. 1

[46] JP Booth, D Marinov, M Foucher, O Guaitella, D Bresteau, L Cabaret, and C Drag. Gas temperature measurements in oxygen plasmas by high-resolution two-photon absorption laser-induced fluorescence. *Journal of Instrumentation*, 10(11):C11003, 2015. 1

[47] O Guaitella and A Sobota. The impingement of a khz helium atmospheric pressure plasma jet on a dielectric surface. *Journal of Physics D: Applied Physics*, 48(25):255202, 2015. 1

[48] M Hübner, S Gortschakow, O Guaitella, D Marinov, A Rousseau, J Röpcke, and D Loffhagen. Kinetic studies of no formation in pulsed air-like low-pressure dc plasmas. *Plasma Sources Science and Technology*, 25(3):035005, 2016. 1

[49] Daniil Marinov, Cyril Drag, Christophe Blondel, Olivier Guaitella, Judith Golda, Bart Klarenaar, Richard Engeln, Volker Schulz-von der Gathen, and Jean-Paul Booth. Pressure broadening of atomic oxygen two-photon absorption laser induced fluorescence. *Plasma Sources Science and Technology*, 25(6):06LT03, 2016. 1

[50] Elmar Slikboer, Olivier Guaitella, and Ana Sobota. Time-resolved electric field measurements during and after the initialization of a khz plasma jet: from streamers to guided streamers. *Plasma Sources Science and Technology*, 25(3):03LT04, 2016. 1

[51] A Sobota, O Guaitella, GB Sretenović, IB Krstić, VV Kovačević, Adam Obrusnik, Yen Nhi Nguyen, L Zajíčková, BM Obradović, and MM Kuraica. Electric field measurements in a khz-driven he jet: the influence of the gas flow speed. *Plasma Sources Science and Technology*, 25(6):065026, 2016. 1

[52] Elmar Slikboer, Enric Garcia-Caurel, Olivier Guaitella, and Ana Sobota. Charge transfer to a dielectric target by guided ionization waves using electric field measurements. *Plasma Sources Science and Technology*, 26(3):035002, 2017. 1

[53] Goran B Sretenović, Olivier Guaitella, Ana Sobota, Ivan B Krstić, Vesna V Kovačević, Bratislav M Obradović, and Milorad M Kuraica. Electric field measurement in the dielectric tube of helium atmospheric pressure plasma jet. *Journal of Applied Physics*, 121(12):123304, 2017. 1

[54] Vasco Guerra, Tiago Silva, Polina Ogloblina, Marija Grofulović, Loann Terraz, Mário Lino da Silva, Carlos D Pintassilgo, Luís L Alves, and Olivier Guaitella. The case for in situ resource utilisation for oxygen production on mars by non-equilibrium plasmas. *Plasma Sources Science and Technology*, 26(11):11LT01, 2017. 1

[55] BLM Klarenaar, R Engeln, DCM van den Bekerom, MCM van de Sanden, AS Morillo-Candas, and O Guaitella. Time evolution of vibrational temperatures in a co2 glow discharge measured with infrared absorption spectroscopy. *Plasma Sources Science and Technology*, 26(11):115008, 2017. 1

[56] Elmar Slikboer, Ana Sobota, Olivier Guaitella, and Enric Garcia-Caurel. Electric field and temperature in a target induced by a plasma jet imaged using mueller polarimetry. *Journal of Physics D: Applied Physics*, 51(2):025204, 2017. 1

[57] Elmar Slikboer, Ana Sobota, Olivier Guaitella, and Enric Garcia-Caurel. Imaging axial and radial electric field components in dielectric targets under plasma exposure. *Journal of Physics D: Applied Physics*, 51(11):115203, 2018. 1

[58] Bart Leonardus Mändy Klarenaar, Marija Grovulović, Ana Sofia Morillo-Candas, Dirk Cornelis Maria van den Bekerom, Mark Damen, Richard Van de Sanden, Olivier Guaitella, and Richard Engeln. A rotational raman study under non-thermal conditions in a pulsed co 2 glow discharge. *Plasma Sources Science and Technology*, 27(4):045009, 2018. 1

[59] Vesna V Kovačević, Goran B Sretenović, Elmar Slikboer, Olivier Guaitella, Ana Sobota, and Milorad M Kuraica. The effect of liquid target on a nonthermal plasma jet?imaging, electric fields, visualization of gas flow and optical emission spectroscopy. *Journal of Physics D: Applied Physics*, 51(6):065202, 2018. 1

[60] Tiago Silva, Marija Grofulovic, Bart Leonardus Mändy Klarenaar, Ana Sofia Morillo-Candas, Olivier Guaitella, Richard Engeln, Carlos Daniel Pintassilgo, and Vasco Guerra. Kinetic study of low-temperature co 2 plasmas under non-equilibrium conditions. i. relaxation of vibrational energy. *Plasma Sources Science and Technology*, 27(1):015019, 2018. 1