

# Curriculum Vitae

## General information

Viacheslav (Slava) SHKIRSKIY, 32-year-old

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**Publications:** **30 articles in A-class academic journals** (ACS Appl. Mater. Interfaces, ACS Anal. Chem., Corros. Sci., Electrochim. Acta etc.)  
**Research fundings:** **National Young Researcher Starting Grant (ANR JCJC 2022)**, Marie-Curie individual fellowship - MSCA-IF 2018 (UK), DAAD fellowship (Germany)



## Employment

*2021 October - present* **CNRS research fellow (Chargé de recherche)**  
**Université Paris Cité**, ITODYS laboratory, Team TERS, Paris/France

*2020 September – 2021 September* **Postdoctoral researcher**  
**University of Angers**, Moltech Anjou, Angers/France  
Team leaders: *Dr. Christelle Gautier, Prof. Tony Breton*  
« *Electro-switchable fluorescent surfaces* »

*2018 June – 2020 May* **University of Warwick**, Electrochemistry and Interfaces group, Coventry, UK  
Supported by *Marie Curie Individual Fellowship 2018*  
Team leader: *Prof. Patrick Unwin*  
« *Nanoscale electrochemistry on light alloys* »

*2017 January - 2017 December* **Max-Planck-Institut für Eisenforschung GmbH**, Corrosion group, Düsseldorf, Germany  
Scholarship from *German Academic Exchange Service (DAAD)*  
Team leader: *Dr. Michael Rohwerder*  
« *Scanning Kelvin Probe study of the effect of CO<sub>2</sub> on delamination kinetics* »

*2015 October – 2016 December, 2018 Jan - May* **Institut de Recherche Chimie Paris**, Interfaces, Electrochemistry, Energy group (I2E), Paris, France  
**Université Pierre et Marie Curie**, Interfaces and Electrochemical Systems group (LISE), Paris, France  
Supported by *industrial partner “Safran”*  
Team leaders: *Dr. Vincent Vivier, Dr. Polina Volovitch*  
« *Mechanisms of degradation of metal/oxide/polymer interfaces for novel aeronautic applications – methodology development and kinetic studies* »

## Education

**PhD in physical and analytical chemistry, defended on September 24 (with honors)**

*2012 October – 2015 September* **Université Pierre et Marie Curie**, Chimie ParisTech, Paris  
Scholarship from *Campus France*  
Scientific supervisors: *Dr. Polina Volvitch and Prof. Kevin Ogle*  
« *Corrosion inhibition of galvanized steel by LDH - inhibitor hybrids: Mechanisms of Inhibitor Release and Corrosion Reactions* ».

*2007 - 2012* **Bachelor and Master programs (with honors)**  
**Department of Chemistry, Moscow State University**, Moscow, Russia  
Internship for the final year of study at *Laboratory of Kinetics and Catalysis*  
Team leader: *Dr. Irina Ivanova*  
« *Dehydration of methanol in packed bed membrane reactor* »

**List of Indexed Publications**  
(corresponding authors are underlined)

- A1.** L. Godeffroy, J.-F. Lemineur, **V. Shkirskiy**, M. Miranda Vieira, J.-M. Noël, F. Kanoufi, *Bridging the Gap between Single Nanoparticle Imaging and Global Electrochemical Response by Correlative Microscopy Assisted By Machine Vision*, **Small Methods**, (2022) p. 2200659
- A2.** E. Daviddi, **V. Shkirskiy**, P. M. Kirkman, M. P. Robin, C. L. Bentley, P. R. Unwin, *Screening the Surface Structure-Dependent Action of a Benzotriazole Derivative on Copper Electrochemistry in a Triple-Phase Nanoscale Environment*, **The Journal of Physical Chemistry C**, 126 (2022), p. 14897-14907
- A3.** J. Billon, **V. Shkirskiy**, S. Dabos-Seignon, T. Breton, C. Gautier, *No more compromise: A facile route towards functionalized surfaces with stable monolayers*, **Physical Chemistry Chemical Physics**, 24 (2022) p. 14294-14298
- A4.** V. Shkirskiy, J. Billon, E. Levillain, C. Gautier, *From Monolayer to Multilayer: Perylenediimide Diazonium Derivative Acting Either as a Growth Inhibitor or a Growth Enhancer*, **ACS Langmuir**, 37 (2021) p. 13234-12841
- A5.** T. Sanchez, E. Kurchanova, **V. Shkirskiy**, J. Swiatowska, V. Vivier, P. Volovitch, *Detection and quantification of defect evolution at buried metal-oxide-polymer interface on rough substrate by local electrochemical impedance mapping*, **Electrochimica Acta**, 388 (2021) p. 138467
- A6.** V. Shkirskiy, E. Levillain, C. Gautier, *Capacitive impedance for following in-situ grafting kinetics of diazonium salts*, **ChemPhysChem**, 22 (2021) p. 1074-1078
- A7.** E. Daviddi, **V. Shkirskiy**, P. Kirkman, M. P. Robin, C. L. Bentley, P. R. Unwin, *Nanoscale Electrochemistry in a Copper/Aqueous/Oil Three-phase System: Surface Structure-Activity-Corrosion Potential Relationships*, **Chemical Science**, 12 (2021) p. 3055-3069
- A8.** T. Sanchez, S. Gillet, **V. Shkirskiy**, V. Vivier, J. Echouard, J. Swiatowska, P. Volovitch, *New experimental approach for intelligent screening of buried metal/oxide/polymer interfaces via local electrochemistry: Example of undamaged model epoxy-coated Zn alloys*, **Electrochimica Acta**, 367 (2021) p. 137411
- A9.** G. Wood, C. E. Zvoriste-Walters, M. G. Munday, M. E. Newton, **V. Shkirskiy**, P. R. Unwin, J. V. Macpherson, *High pressure high temperature synthesis of highly boron doped diamond microparticles and porous electrodes for electrochemical applications*, **Carbon**, 171 (2021) p. 845-856
- A10.** V. Shkirskiy, M. Kang, I. J. McPherson, C. L. Bentley, O. J. Wahab, E. Daviddi, A. W. Colburn, P. R. Unwin, *Electrochemical Impedance Measurements in Scanning Ion Conductance Microscopy*, **ACS Analytical Chemistry**, 92 (2020) p. 12509-12517
- A11.** P. J. Denissen, **V. Shkirskiy**, P. Volovitch, S. J. Garcia, *Corrosion Inhibition at Scribed Locations in Coated AA2024-T3 by Cerium- and DMTD-Loaded Natural Silica Microparticles under Continuous Immersion and Wet/Dry Cyclic Exposure*, **ACS Applied Materials and Interfaces**, 12 (2020) p. 23417-23431
- A12.** V. Shkirskiy, L. C. Yule, E. Daviddi, C. L. Bentley, J. Aarons, G. West, P. R. Unwin, *Nanoscale Scanning Electrochemical Cell Microscopy and Correlative Surface Structural Analysis to Map Anodic and Cathodic Reactions on Polycrystalline Zn in Acid Media*, **Journal of The Electrochemical Society**, 167 (2020) p. 041507
- A13.** V. Shkirskiy, A. Krasnova, T. Sanchez, A. Amar, V. Vivier, P. Volovitch, *Development of anodic and cathodic blisters at a model Zn/epoxy interface surveyed by local electrochemical impedance*, **Electrochemistry Communications**, 111 (2020) p. 106633
- A14.** V. Shkirskiy, F. D. Speck, N. Kulyk, S. Cherevko, *On the time resolution of electrochemical scanning flow cell coupled to downstream analysis*, **Journal of the Electrochemical Society**, 166 (2019) p. H866-H870

- A15.** L. C. Yule, **V. Shkirskiy**, J. Aarons, G. West, B. A. Shollock, C. L. Bentley, P. R. Unwin, *Nanoscale Electrochemical Visualization of Grain-Dependent Anodic Iron Dissolution from Low Carbon Steel*, ***Electrochimica Acta***, 332 (2020) p. 135267
- A16.** L. C. Yule, **V. Shkirskiy**, J. Aarons, G. West, C. L. Bentley, B. Shollock, P. R. Unwin, *Nanoscale Active Sites for the Hydrogen Evolution Reaction on Low Carbon Steel*, ***The Journal of Physical Chemistry C***, 123 (2019) p. 24146-24155
- A17.** A. Maltseva, **V. Shkirskiy**, G. Lefevre, P. Volovitch, *Effect of pH on Mg(OH)<sub>2</sub> film evolution on corroding Mg by in situ kinetic Raman mapping (KRM)*, ***Corrosion Science***, 153 (2019) p. 272-282
- A18.** V. Shkirskiy, M. Uebel, A. Maltseva, G. Lefèvre, P. Volovitch, M. Rohwerder, *Cathodic driven coating delamination suppressed by inhibition of cation migration along Zn| polymer interface in atmospheric CO<sub>2</sub>*, ***Nature Materials Degradation***, 3 (2019) p. 1-10
- A19.** C. L. Bentley, J. Edmondson, G. N. Meloni, D. Perry, **V. Shkirskiy**, P. R. Unwin, *Nanoscale Electrochemical Imaging*, ***ACS Analytical Chemistry***, 91 (2018) p. 84-108
- A20.** V. Shkirskiy, A. Maltseva, K. Ogle, P. Volovitch, *Environmental effects on selective dissolution from ZnAlMg alloy under low frequency alternating current perturbations*, ***Electrochimica Acta***, 238 (2017) p. 397-409.
- A21.** V. Shkirskiy, P. Volovitch, V. Vivier, *Development of quantitative Local Electrochemical Impedance Mapping: an effective tool for the evaluation of delamination kinetics*, ***Electrochimica Acta***, 235 (2017) p. 442-452.
- A22.** T. Stimpfling, P. Vialat, H. Hintze-Bruening, P. Keil, **V. Shkirskiy**, P. Volovitch, K. Ogle, F. Leroux, *Amino Acid Interleaved Layered Double Hydroxides as Promising Hybrid Materials for AA2024 Corrosion Inhibition*, ***European Journal of Inorganic Chemistry***, 2016 (2016) p. 2006-2016.
- A23.** **V. Shkirskiy**, P. Maciel, J. Deconinck, K. Ogle, *On the time resolution of the atomic emission spectroelectrochemistry method*, ***Journal of the Electrochemical Society***, 163 (2016) p. C37-C44.
- A24.** D.A. Fedosov, A.V. Smirnov, **V. Shkirskiy**, T. Voskoboynikov, I.I. Ivanova, *Methanol dehydration in NaA zeolite membrane reactor*, ***Journal of Membrane Science***, 486 (2015) p. 189-194.
- A25.** V. Shkirskiy, P. Keil, H. Hintze-Bruening, F. Leroux, P. Vialat, G. Lefèvre, K. Ogle, P. Volovitch, *Factors affecting MoO<sub>4</sub><sup>2-</sup> inhibitor release from Zn<sub>2</sub>Al based layered double hydroxide and their implication in protecting hot dip galvanized steel by means of organic coatings*, ***ACS Applied Materials and Interfaces***, 7 (2015) p. 25180-25192.
- A26.** V. Shkirskiy, P. Keil, H. Hintze-Bruening, F. Leroux, P. Volovitch, K. Ogle, *Observation of L-cysteine enhanced zinc dissolution during cathodic polarization and its consequences for corrosion rate measurements*, ***Electrochimica Acta***, 184 (2015) p. 203-213.
- A27.** V. Shkirskiy, P. Keil, H. Hintze-Bruening, F. Leroux, F. Brisset, K. Ogle, P. Volovitch, *The effects of L-cysteine on the inhibition and accelerated dissolution processes of zinc metal*, ***Corrosion Science***, 100 (2015) 101-112.
- A28.** V. Shkirskiy, P. Keil, H. Hintze-Bruening, F. Leroux, T. Stimpfling, D. Dragoe, K. Ogle, P. Volovitch, *MoO<sub>4</sub><sup>2-</sup> as a soluble inhibitor for Zn in neutral and alkaline solutions*, ***Corrosion Science***, 99 (2015) p. 31-41.
- A29.** **V. Shkirskiy**, K. Ogle, *A novel coupling of electrochemical impedance spectroscopy with atomic emission spectroelectrochemistry: Application to the open circuit dissolution of zinc*, ***Electrochimica Acta***, 168 (2015) p. 167-172.
- A30.** **V. Shkirskiy**, A.D. King, O. Gharbi, P. Volovitch, J.R. Scully, K. Ogle, and N. Birbilis, *Revisiting the Electrochemical Impedance Spectroscopy of Magnesium with Online Inductively Coupled Plasma Atomic Emission Spectroscopy*, ***ChemPhysChem***, 16 (2015) p. 536-539.

## Submitted Publications

**S1.** L Godeffroy, S Derouich, F Kanoufi, **V Shkirskiy**, *Imaging and quantifying the chemical communication between single particles in metal alloy*, **submitted to ACS Analytical Chemistry** (available at ChemRxiv, doi: [10.26434/chemrxiv-2022-rn77b](https://doi.org/10.26434/chemrxiv-2022-rn77b))

**S2.** **V Shkirskiy**, F Kanoufi, *Reflective microscopy for mechanistic insights in corrosion research*, **submitted to Current Opinion in Electrochemistry** (available at ChemRxiv, doi: [10.26434/chemrxiv-2022-0w70n](https://doi.org/10.26434/chemrxiv-2022-0w70n))