# Jakub Drnec

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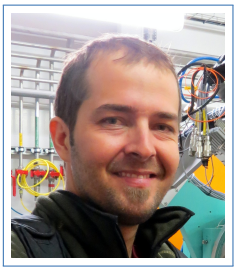

## Citizenship

Canadian and Czech (EU) Citizen

## Language proficiency

Czech (native), English (fluent), French (working knowledge)

## Highlights

- Lead scientist for research projects related to fuel cell electrocatalysis and materials research.
- Expert knowledge of electrochemical systems used for energy conversion and storage.
- Expert knowledge in advanced synchrotron based X-ray scattering techniques used for in-situ and operando catalysis research on single crystals, thin films and polycrystalline materials.
- Expert knowledge of X-ray instrumentation and synchrotron beamline design.
- Expert knowledge of electron spectroscopy and diffraction.
- Extensive teaching and mentoring experience.

## Research interests

Surface science, Electrochemistry, Energy systems, Fuel cells, Energy production, Energy storage, Batteries, Heterogeneous catalysis, Bonding vs. structure for monoatomic layers, 2D materials, Underpotential deposition (UPD), UHV instrumentation, X-ray instrumentation, Synchrotron radiation based X-ray scattering techniques, Advanced materials, Graphene, Quantum modeling, Complex systems and complexity,

## Citation Metrics

64 publications, h-index 15, i-10 index 25 (Google Scholar June 2020)

## Experience

### Research Positions

2018–present **Beamline Responsible (ID03 beamline)**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.

- Supervision of beamline operation and scientific outcome (1 postdoc, 2 junior scientists, 1 beamline manager and 1 technician).

2015–present **Beamline Scientist (ID31 beamline)**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.

- In-situ investigations of Pt electrooxidation (lead scientist): Management of an international team of scientist (senior and junior), design of the experiments, decisions about the future direction of the research, publication of the results.
- Tomography of low temperature fuel cell in operando conditions (lead scientist): Formulation of the scientific questions, design of the fuel cell according to industrial standards to be used for X-ray tomography, management of small team of students and scientist, design of the experiments and data analysis strategies.
- Development of new operando hard X-ray surface diffraction techniques (lead scientist): Development of instrumentation and electrochemical cells, students supervision, publication of the results.
- Study of the role of defects in oxygen reduction electrocatalysis: Responsible for operando experiments using X-ray probe: design, preparation, data analysis and interpretation.
- Si insertion anodes for Li-ion batteries: Operando studies of Si anodes during Li insertion, project in preparation phase.
- Development of beamline data analysis pipeline: Architecture and software development together with the team of engineers.
- **Technical duties:** Beamline instrument maintenance and development, Beamline user support

2013–2015 **Junior Beamline Scientist (ID03 beamline)**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.

- In-situ investigations of Pt electrooxidation (lead scientist): Created a research idea, developed experimental methodologies (XRR, SXRD, GISAXS, CV, Potential step), organized a research team, co-developed atomistic model of Pt oxidation and degradation of Pt based fuel cell catalysts, published the results.

- Investigation of graphene based magnetic heterostructures (lead scientist): Designed the experiments , decided about the used characterization techniques (XPS, MOKE, LEED, XRR, SXRD), managed a senior and junior scientists team for data acquisition and analysis (3 students, MSc thesis), published the results.
- Development of Pt electrocatalyst supported on graphene/Iridium heterostructure (lead scientist): Formulated the scientific problem, designed the experiments and made decision about the used techniques (XPS, LEED, CV), managed MSc student, publication of the results in preparation.
- **Technical duties:** Beamline instrument maintenance and development, Beamline user support

2011–2013 **Postdoctoral Fellow (ID03 beamline)**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.

- Stability of bimetallics Pt based ORR catalysts (lead scientist): Formulated the scientific problem, designed the experiments and decided about used techniques (XRR, SXRD, GISAXS, CV, Potential step), developed new experimental approaches, managed team of senior and junior scientists, published the results.
- Development of advanced SXRD data analysis techniques (lead scientist): Developed the theory and methodology, helped with software development, deployed functional software (BINoculars), managed PhD student, published the results.
- Structural and Electronic Reconstructions at the LaAlO3/SrTiO3 Interface: Responsible for experiment preparation, data analysis.
- **Technical duties:** Beamline instrument maintenance and development, Beamline user support

### Teaching Positions

2014 **Invited lecturer**, *Charles University, Physics Department*, Prague, Czech Republic, Electrochemistry for physics postgraduate students.
30 students

2010 **Chemistry Instructor**, *Camosun College*, Victoria BC, Canada, General chemistry.
60 students in lectures (200 hrs), 120 students in labs (400 hrs).

2004–2010 **Teaching assistant**, *University of Victoria, Chemistry Department*, Victoria BC, Canada, Physical Chemistry, General chemistry for engineers.
19 sections (15 students per section), 98 hrs per section.

### Other teaching experience

2011-present **Postgraduate co-supervisor**.
3 PhD students, 4 MSc students.

2011-present **Undergraduate mentor**.
5 students.

2004-2010 **Chemistry and Physics Tutor**, General Chemistry, Physical Chemistry, Quantum Physics and Chemistry.
10 university students.

## Education

2004–2010 **PhD, Chemistry**, *University of Victoria*, Victoria BC, Canada.
Title of dissertation: Surface science of Cs, CsO and CsI ionic layers on Pt(111).

1998–2003 **MSc, Physics**, *Charles University*, Prague, Czech Republic.
Title of thesis: Preparation of thin NEG layers and their study by SIMS and XPS. (UHV pumping coatings for particle accelerators)

## Technical skills

- Detailed knowledge of x-ray diffraction and spectroscopy techniques (XRD, SXRD, GISAXS, XRR, HAXPES, EXAFS, XANES, Coherent Imaging, Real space diffraction imaging)
- In-depth experience with Ultra High Vacuum (UHV) characterization and preparation techniques (XPS, ARXPS, AES, UPS, TDS, LEED, SIMS, Kelvin probe, magnetron sputtering).
- Expert knowledge of Electrochemistry and Electrochemical methods (CV, EIS, Chronoamperometry, RDE).
- Expert knowledge of gas phase catalysis.
- Extensive knowledge of magnetic measurements of thin layers (SMOKE)

- Experience with scanning probe microscopy (STM, AFM)
- Experience with electron microscopy (SEM)
- 6 years in-depth experience with synchrotron X-ray instrumentation and design of the beamline components
- Excellent knowledge of UHV instruments, vacuum technology and physics.
- Maintenance and design of X-ray, UHV and electrochemical instruments.
- Troubleshooting, design and manufacturing of electronic circuits (PCB and CAD experience).
- Development of data analysis procedures and data acquisition software (Python, C++, Visual Basic, Origin).
- Expert knowledge of data analysis software for X-ray diffraction (FullProf, GSASII, GenX, IsGISAXS, pyFAI, SAXSUtilities)
- Development of theoretical models using Python, C++ and Maple.
- Four years experience with quantum modeling of solid surfaces.

## Professional affiliations

- The Electrochemical Society (ECS)
- The International Society of Electrochemistry (ISE)

## Other Activities

2019–present **Coordination board member for ESRF**, *League of European Accelerator-based Photon Sources (LEAPS)* .

- Coordination of LEAPS activities.
- Development of joint LEAPS grant proposals.

2016–present **Chemistry bridge coordinator**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.

- Coordination of chemistry activities across ESRF.
- Organization of topical chemistry symposia.
- Coordination of Grenoble wide battery knowledge network (CEA, University of Grenoble, CNRS, ILL, ESRF).

2012–present **Guide**, *European Synchrotron Radiation Facility (ESRF)*, Grenoble, France.
Lectures and tours for general public.

2007–present **Director and founder**, *BC Creek Protection Society*, Victoria BC, Canada.
Watchdog for renewable energy deployment in British Columbia.

2006–2009 **Volunteer**, *Scientists in School*, Victoria BC, Canada.
Organizing and supervising basic chemistry experiments for children ranging from kindergarten to grade 8.

2003–2004 **Electrician**, *Javelin Industrial*, Victoria BC, Canada.
Hardware setup for phone and network systems.

1997–2003 **Outdoor guide**, *CVOK*, Pardubice, Czech Republic.

## Publications

### 2009

[1] **Drnec, J.**, Harrington, D. A. **2009**, "Anomalous adsorption of Cs on Pt(1 1 1)", *Surf. Sci.*, *603*, 2005–2014.

### 2010

[2] **Drnec, J.**, Harrington, D. A. A. **2010**, "Electrochemical Study of Pt(111)-Cs Surfaces Prepared in Ultra-High Vacuum", *ECS Trans.*, *28*, 47–55.

[3] **Drnec, J.**, Harrington, D. A. **2010**, "Coadsorption of cesium and iodine on Pt(111): Structure and ionicity", *Surf. Sci.*, *604*, 2106–2115.

### 2013

[4] Salluzzo, M., Gariglio, S., Torrelles, X., Ristic, Z., Di Capua, R., **Drnec, J.**, Sala, M. M., Ghiringhelli, G., Felici, R., Brookes, N. B. **2013**, "Structural and electronic reconstructions at the LaAlO3/ SrTiO3 Interface", *Adv. Mater.*, *25*, 2333–2338.

### 2014

[5] **Drnec, J.**, Zhou, T., Pintea, S., Onderwaater, W., Vlieg, E., Renaud, G., Felici, R. **2014** in J. Appl. Crystallogr. *Vol. 47*, International Union of Crystallography, pp. 365–377.

[6] **Drnec, J.**, Harrington, D. A. **2014**, "Oxygen and iodine adsorption on cesium-precovered Pt(111)", *Surf. Sci.*, *630*, 9–15.

[7] De Poel, W., Pintea, S., De Jong, A., **Drnec, J.**, Carlà, F., Felici, R., Op Den Camp, H., Elemans, J. A., Van Enckevort, W. J., Rowan, A. E., Vlieg, E. **2014**, "Dibenzo crown ether layer formation on muscovite mica", *Langmuir*, *30*, 12570–12577.

[8] De Poel, W., Pintea, S., **Drnec, J.**, Carla, F., Felici, R., Mulder, P., Elemans, J. A., Van Enckevort, W. J., Rowan, A. E., Vlieg, E. **2014**, "Muscovite mica: Flatter than a pancake", *Surf. Sci.*, *619*, 19–24.

### 2015

[9] **Drnec, J.**, Bizzotto, D., Carlà, F., Fiala, R., Sode, A., Balmes, O., Detlefs, B., Dufrane, T., Felici, R. **2015** in Appl. Surf. Sci. *Vol. 354*, Elsevier B.V., pp. 443–449.

[10] Lorch, C., Banerjee, R., Dieterle, J., Hinderhofer, A., Gerlach, A., **Drnec, J.**, Schreiber, F. **2015**, "Templating Effects of $\alpha$-Sexithiophene in Donor-Acceptor Organic Thin Films", *J. Phys. Chem. C*, *119*, 23211–23220.

[11] Roobol, S., Onderwaater, W., **Drnec, J.**, Felici, R., Frenken, J. **2015**, "BINoculars: Data reduction and analysis software for two-dimensional detectors in surface X-ray diffraction", *J. Appl. Crystallogr.*, *48*, 1324–1329.

[12] Banerjee, R., Novák, J., Frank, C., Girleanu, M., Ersen, O., Brinkmann, M., Anger, F., Lorch, C., Dieterle, J., Gerlach, a., **Drnec, J.**, Yu, S., Schreiber, F. **2015**, "Structure and Morphology of Organic SemiconductorâĂŞNanoparticle Hybrids Prepared by Soft Deposition", *J. Phys. Chem. C*, *119*, 5225–5237.

[13] **Drnec, J.**, Vlaic, S., Carlomagno, I., Gonzalez, C. J., Isern, H., Carlà, F., Fiala, R., Rougemaille, N., Coraux, J., Felici, R. **2015**, "Surface alloying upon Co intercalation between graphene and Ir(111)", *Carbon N. Y.*, *94*, 554–559.

## 2016

[14] Dubau, L., Nelayah, J., Moldovan, S., Ersen, O., Bordet, P., **Drnec, J.**, Asset, T., Chattot, R., Maillard, F. **2016**, "Defects do Catalysis: CO Monolayer Oxidation and Oxygen Reduction Reaction on Hollow PtNi/C Nanoparticles", *ACS Catal.*, *6*, 4673–4684.

[15] Onderwaater, W. G., Tuijn, P. C.V. D., Mom, R. V., Spronsen, M. A. V., Roobol, S. B., Saedi, A., **Drnec, J.**, Isern, H., Carla, F., Dufrane, T., Koehler, R., Crama, B., Groot, I. M. N., Felici, R., Frenken, J. W. M. **2016**, "Combined scanning probe microscopy and x- ray scattering instrument for in situ catalysis investigations", *Rev. Sci. Instrum.*, *87*, 113705.

[16] Carlomagno, I., **Drnec, J.**, Scaparro, A. M., Cicia, S., Vlaic, S., Felici, R., Meneghini, C. **2016**, "Co-Ir interface alloying induced by thermal annealing", *J. Appl. Phys.*, *120*, 195302.

[17] Schneck, E., Scoppola, E., **Drnec, J.**, Mocuta, C., Felici, R., Novikov, D., Fragneto, G., Daillant, J. **2016**, "Atom-scale depth localization of biologically important chemical elements in molecular layers", *Proc. Natl. Acad. Sci.*, *113*, 9521–9526.

[18] Gaudry, Chatelier, C., McGuirk, G. M., Serkovic Loli, L. N., De Weerd, M. C., Ledieu, J., Fournée, V., Felici, R., **Drnec, J.**, Beutier, G., De Boissieu, M. **2016**, "Structure of the Al13Co4 (100) surface: Combination of surface x-ray diffraction and ab initio calculations", *Phys. Rev. B*, *94*, 165406.

[19] Goryachev, A., Carlà, F., **Drnec, J.**, Onderwaater, W. G., Felici, R., Krause, P. P., Wonders, A. H., Hensen, E. J., Hofmann, J. P. **2016**, "Synchrotron based operando surface X-ray scattering study towards structureâĂŞactivity relationships of model electrocatalysts", *ChemistrySelect*, *1*, 1104–1108.

[20] Pintea, S., de Poel, W., de Jong, A. E. F., Vonk, V., van der Asdonk, P., **Drnec, J.**, Balmes, O., Isern, H., Dufrane, T., Felici, R., Vlieg, E. **2016**, "SolidâĂŞLiquid Interface Structure of Muscovite Mica in CsCl and RbBr Solutions", *Langmuir*, *32*, 12955–12965.

## 2017

[21] Chattot, R., Asset, T., Bordet, P., **Drnec, J.**, Dubau, L., Maillard, F. **2017**, "Beyond strain and ligand effects: Microstrain-induced enhancement of the oxygen reduction reaction kinetics on various PtNi/C nanostructures", *ACS Catal.*, *7*, 398–408.

[22] Asset, T., Chattot, R., **Drnec, J.**, Bordet, P., Job, N., Maillard, F., Dubau, L. **2017**, "Elucidating the Mechanisms Driving the Aging of Porous Hollow PtNi/C Nanoparticles by Means of COadsStripping", *ACS Appl. Mater. Interfaces*, *9*, 25298–25307.

[23] Ruge, M., **Drnec, J.**, Rahn, B., Reikowski, F., Harrington, D. A., Carlà, F., Felici, R., Stettner, J., Magnussen, O. M. **2017**, "Electrochemical Oxidation of Smooth and Nanoscale Rough Pt(111): An In Situ Surface X-ray Scattering Study", *J. Electrochem. Soc.*, *164*, H608–H614.

[24] Onderwaater, W. G., Balmes, O., Roobol, S. B., Van Spronsen, M., **Drnec, J.**, Carla, F., Felici, R., Frenken, J. W. M. **2017**, "Oxidation of CO on Pd(1 0 0): on the structural evolution of the PdO layer during the self sustained oscillation regime", *Catal. Struct. React.*, *3*, 89–94.

[25] Ledina, M. A., Bui, N, Liang, X, Kim, Y, Jung, J, Perdue, B, Tsang, C, **Drnec, J**, Carl, F, Soriaga, M. P., Reber, T. J., Stickney, J. L. **2017**, Electrochemical Formation of Germanene : pH 4 . 5.

[26] Asset, T, Chattot, R, Le Bacq, O, Pasturel, A, **Drnec, J**, Bordet, P, Nelayah, J, Dubau, L, Maillard, F. **2017**, "Porous Hollow PtNi/C Nanoparticles and Their Many Facets", *ECS Trans.*, *80*, 731–741.

[27] Chattot, R., Asset, T., Bordet, P., **Drnec, J.**, Dubau, L., Maillard, F. **2017**, "Beyond strain and ligand effects: Microstrain-induced enhancement of the oxygen reduction reaction kinetics on various PtNi/C nanostructures", *ACS Catal.*, *7*, 398–408.

[28] Reikowski, F., Wiegmann, T., Stettner, J., **Drnec, J.**, Honkimäki, V., Maroun, F., Allongue, P., Magnussen, O. M. **2017**, "Transmission Surface Diffraction for Operando Studies of Heterogeneous Interfaces", *J. Phys. Chem. Lett.*, *8*, 1067–1071.

[29] Chattot, R., Asset, T., **Drnec, J.**, Bordet, P., Nelayah, J., Dubau, L., Maillard, F. **2017**, "Atomic-Scale Snapshots of the Formation and Growth of Hollow PtNi/C Nanocatalysts", *Nano Lett.*, *17*, 2447–2453.

[30] Vinogradov, N., Simonov, K., Generalov, A., **Drnec, J.**, Carlà, F., Vinogradov, A., Preobrajenski, A., Mårtensson, N., Felici, R. **2017**, "The structural evolution of graphene/Fe(110) systems upon annealing", *Carbon N. Y.*, *111*, 113–120.

[31] **Drnec, J.**, Ruge, M., Reikowski, F., Rahn, B., Carlà, F., Felici, R., Stettner, J., Magnussen, O. O. M., Harrington, D. D. A. **2017**, "Pt oxide and oxygen reduction at Pt(111) studied by surface X-ray diffraction", *Electrochem. commun.*, *84*, 50–52.

[32] Schmies, H., Bergmann, A., **Drnec, J.**, Wang, G., Teschner, D., Kühl, S., Sandbeck, D. J. S., Cherevko, S., Gocyla, M., Shviro, M., Heggen, M., Ramani, V., Dunin-Borkowski, R. E., Mayrhofer, K. J. J., Strasser, P. **2017**, "Unravelling Degradation Pathways of Oxide-Supported Pt Fuel Cell Nanocatalysts under In Situ Operating Conditions", *Adv. Energy Mater.*, *8*, 1701663.

[33] de Poel, W., Vaessen, S. L., **Drnec, J.**, Engwerda, A. H., Townsend, E. R., Pintea, S., de Jong, A. E., Jankowski, M., Carlà, F., Felici, R., Elemans, J. A., van Enckevort, W. J., Rowan, A. E., Vlieg, E. **2017**, "Metal ion-exchange on the muscovite mica surface", *Surf. Sci.*, *665*, 56–61.

[34] Ruge, M., **Drnec, J.**, Rahn, B., Reikowski, F., Harrington, D. A., Carlà, F., Felici, R., Stettner, J., Magnussen, O. M. **2017**, "Structural Reorganization of Pt(111) Electrodes by Electrochemical Oxidation and Reduction", *J. Am. Chem. Soc.*, *139*, 4532–4539.

[35] **Drnec, J.**, Ruge, M., Reikowski, F., Rahn, B., Carlà, F., Felici, R., Stettner, J., Magnussen, O. M., Harrington, D. A. **2017**, "Initial stages of Pt ( 111 ) electrooxidation : dynamic and structural studies by surface X-ray diffraction", *Electrochim. Acta*, *224*, 220–227.

[36] **Drnec, J.**, Harrington, D. A., Magnussen, O. M. **2017**, "Electrooxidation of Pt(111) in acid solution", *Curr. Opin. Electrochem.*, *4*, 69–75.

## 2018

[37] Vamvakeros, A., Jacques, S. D., Di Michiel, M., Matras, D., Middelkoop, V., Ismagilov, I. Z., Matus, E. V., Kuznetsov, V. V., **Drnec, J.**, Senecal, P., Beale, A. M. **2018**, "5D operandoÂătomographic diffraction imaging of a catalyst bed", *Nat. Commun.*, *9*, 1–11.

[38] Hornberger, E., Bergmann, A., Schmies, H., Kühl, S., Wang, G., **Drnec, J.**, Sandbeck, D. J., Ramani, V., Cherevko, S., Mayrhofer, K. J., Strasser, P. **2018**, "In Situ Stability Studies of Platinum Nanoparticles Supported on Ruthenium-Titanium Mixed Oxide (RTO) for Fuel Cell Cathodes", *ACS Catal.*, *8*, 9675–9683.

[39] Schmies, H., Hornberger, E., Anke, B., Jurzinsky, T., Nong, H. N., Dionigi, F., Kühl, S., **Drnec, J.**, Lerch, M., Cremers, C., Strasser, P. **2018**, "Impact of Carbon Support Functionalization on the Electrochemical Stability of Pt Fuel Cell Catalysts", *Chem. Mater.*, *30*, 7287–7295.

[40] Carlomagno, I., **Drnec, J.**, Scaparro, A. M., Cicia, S., Mobilio, S., Felici, R., Meneghini, C. **2018**, "Effectiveness of Co intercalation between Graphene and Ir(1 1 1)", *Chem. Phys. Lett.*, *697*, 7–11.

[41] **Drnec, J.**, Stickney, J., Harrington, D. **2018**, "From Salt to Germanene : A Cookbook for Electrochemical Formation of 2D Materials ( Inspired by", *ECS Trans.*, *85*, 31–40.

[42] Rameshan, R., Vonk, V., Franz, D., **Drnec, J.**, Penner, S., Garhofer, A., Mittendorfer, F., Stierle, A., Klötzer, B. **2018**, "Role of precursor carbides for graphene growth on Ni(111)", *Sci. Rep.*, *8*, 2662.

[43] Khansur, N. H., Eckstein, U., Riess, K., Martin, A., **Drnec, J.**, Deisinger, U., Webber, K. G. **2018**, "Synchrotron x-ray microdiffraction study of residual stresses in BaTiO3 film deposited at room temperature by aerosol deposition", *Scr. Mater.*

[44] Carlomagno, I., **Drnec, J.**, Vlaic, S., Vinogadrov, N., Carlà, F., Isern, H., Meneghini, C., Felici, R. **2018**, "Co film stretching induced by lattice mismatch and annealing: The role of Graphene", *Appl. Surf. Sci.*, *432*, 22–26.

[45] Matras, D., Jacques, S. D. M., Godini, H. R., Khadivi, M., **Drnec, J.**, Poulain, A., Cernik, R. J., Beale, A. M. **2018**, "Real-Time Operando Diffraction Imaging of La-Sr/CaO during the Oxidative Coupling of Methane", *J. Phys. Chem. C*, *122*, 2221–2230.

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

## 2019

[47] Martens, I., Vamvakeros, A., Chattot, R., Blanco, M. V., Rasola, M., Pusa, J., Jacques, S. D., Bizzotto, D., Wilkinson, D. P., Ruffmann, B., Heidemann, S., Honkimäki, V., **Drnec, J. 2019**, "X-ray transparent proton-exchange membrane fuel cell design for in situ wide and small angle scattering tomography", *J. Power Sources*, *437*, 226906.

[48] Poulain, A., Dupont, C., Martinez, P., Guizani, C., **Drnec, J. 2019**, "Wide-angle X-ray scattering combined with pair distribution function analysis of pyrolyzed wood", *J. Appl. Crystallogr.*, *52*, 60–71.

[49] Gommes, C. J., Asset, T., **Drnec, J. 2019**, "Small-angle scattering by supported nanoparticles: exact results and useful approximations", *J. Appl. Crystallogr.*, *52*, 507–519.

[50] Martens, I., Chattot, R., Rasola, M., Blanco, M. V., Honkimäki, V., Bizzotto, D., Wilkinson, D. P., **Drnec, J. 2019**, "Probing the Dynamics of Platinum Surface Oxides in Fuel Cell Catalyst Layers Using in Situ X-ray Diffraction", *ACS Appl. Energy Mater.*, *2*, 7772–7780.

[51] Zielinski, P., Kühne, M., Kärcher, D., Paolucci, F., Wochner, P., Fecher, S., **Drnec, J.**, Felici, R., Smet, J. H. **2019**, "Probing Exfoliated Graphene Layers and Their Lithiation with Microfocused X-rays", *Nano Lett.*, *19*, 3634–3640.

[52] Kircher, M., Rist, J., Trinter, F., Grundmann, S., Waitz, M., Melzer, N., Vela-Perez, I., Mletzko, T., Pier, A., Strenger, N., Siebert, J., Janssen, R., Honkimäki, V., **Drnec, J.**, Demekhin, P. V., Schmidt, L. P. H., Schöffler, M. S., Jahnke, T., Dörner, R. **2019**, "Photon-Momentum-Induced Molecular Dynamics in Photoionization of N2 at h$\nu$=40 keV", *Phys. Rev. Lett.*, *123*, 193001.

[53] Harlow, G. S., **Drnec, J.**, Wiegmann, T., Lipé, W., Evertsson, J., Persson, A. R., Wallenberg, R., Lundgren, E., Vinogradov, N. A. **2019**, "Observing growth under confinement: Sn nanopillars in porous alumina templates", *Nanoscale Adv.*, *1*, 4764–4771.

[54] Semione, G. D., Dangwal Pandey, A., Tober, S., Pfrommer, J., Poulain, A., **Drnec, J.**, Schütz, G., Keller, T. F., Noei, H., Vonk, V., Foster, B., Stierle, A. **2019**, "Niobium near-surface composition during nitrogen infusion relevant for superconducting radio-frequency cavities", *Phys. Rev. Accel. Beams*, *22*, 103102.

[55] Torrelles, X., Cantele, G., De Luca, G. M., Di Capua, R., **Drnec, J.**, Felici, R., Ninno, D., Herranz, G., Salluzzo, M. **2019**, "Electronic and structural reconstructions of the polar (111) SrTiO3 surface", *Phys. Rev. B*, *99*, 205421.

[56] Asset, T., Gommes, C. J., **Drnec, J.**, Bordet, P., Chattot, R., Martens, I., Nelayah, J., Job, N., Maillard, F., Dubau, L. **2019**, "Disentangling the Degradation Pathways of Highly Defective PtNi/C Nanostructures - An Operando Wide and Small Angle X-ray Scattering Study", *ACS Catal.*, *9*, 160–167.

[57] Dionigi, F., Weber, C. C., Primbs, M., Gocyla, M., Bonastre, A. M., Spöri, C., Schmies, H., Hornberger, E., Kühl, S., **Drnec, J.**, Heggen, M., Sharman, J., Dunin-Borkowski, R. E., Strasser, P. **2019**, "Controlling Near-Surface Ni Composition in Octahedral PtNi(Mo) Nanoparticles by Mo Doping for a Highly Active Oxygen Reduction Reaction Catalyst", *Nano Lett.*, *19*, 6876–6885.

## 2020

[58] Gommes, C. J., Chattot, R., **Drnec, J. 2020**, "Stochastic models of dense or hollow nanoparticles and their scattering properties", *J. Appl. Crystallogr.*, *53*, 811–823.

[59] Poel, W., Brugman, S. J. T., Ven, K. H. A., Gasseling, A., Lange, J., Townsend, E. R., Engwerda, A. H. J., Jankowski, M., Blijlevens, M. A. R., Werkhoven, B. L., **Drnec, J.**, Carlà, F., Felici, R., Tuladhar, A., Adhikari, N. M., De Yoreo, J. J., Elemans, J. A.A. W., Enckevort, W. J. P., Rowan, A. E., Vlieg, E. **2020**, "Organothiol Monolayer Formation Directly on Muscovite Mica", *Angew. Chemie*, *132*, 2343–2347.

[60] Dionigi, F., Zeng, Z., Sinev, I., Merzdorf, T., Deshpande, S., Lopez, M. B., Kunze, S., Zegkinoglou, I., Sarodnik, H., Fan, D., Bergmann, A., **Drnec, J.**, de Araujo, J. F., Gliech, M., Teschner, D., Zhu, J., Li, W. X., Greeley, J., Cuenya, B. R., Strasser, P. **2020**, "In-situ structure and catalytic mechanism of NiFe and CoFe layered double hydroxides during oxygen evolution", *Nat. Commun.*, *11*, 1–10.

[61] Carlomagno, I., Scaparro, A., Carlini, L., **Drnec, J.**, Vinai, G., Torelli, P., Felici, R., Mobilio, S., Meneghini, C. **2020**, "Evidence of a thermally-induced microstructural anisotropy in Gr/Co/Ir(111) systems", *Appl. Surf. Sci.*, 146365.

[62] Matras, D., Vamvakeros, A., Jacques, S., Grosjean, N., Rollins, B., Poulston, S., Stenning, G. B. G., Godini, H., **Drnec, J.**, Cernik, R. J., Beale, A. M. **2020**, " Effect of thermal treatment on the stability of Na-Mn-W/SiO 2 Catalyst for the Oxidative Coupling of Methane ", *Faraday Discuss.*, DOI 10.1039/c9fd00142e.

[63] Chattot, R., Martens, I., Scohy, M., Herranz, J., **Drnec, J.**, Maillard, F., Dubau, L. **2020**, "Disclosing Pt-Bimetallic Alloy Nanoparticle Surface Lattice Distortion with Electrochemical Probes", *ACS Energy Lett.*, *5*, 162–169.

[64] Dutta, A., Montiel, I. Z., Erni, R., Kiran, K., Rahaman, M., **Drnec, J.**, Broekmann, P. **2020**, "Activation of bimetallic AgCu foam electrocatalysts for ethanol formation from CO2 by selective Cu oxidation/reduction", *Nano Energy*, *68*, 104331.