

# Daniele Padovan, PhD

JSPS Fellow Post-doctoral Researcher

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**Keywords:** Heterogeneous catalysis • Biomass conversion • Continuous flow chemistry • Catalyst deactivation • Zeolite • Metal Oxide • Material characterisation.

**PROFILE** Currently JSPS Fellow Post-doctoral researcher at Hokkaido University; graduated (Bsc and Msc) in Industrial Chemistry (Bologna University) and obtained PhD in heterogeneous catalysis at Cardiff Catalysis Institute (Cardiff University). I am involved in research on heterogeneous catalysis and chemical engineering applied for biomass conversion; working with batch and continuous flow processes; material synthesis and characterisations; focused on structure-activity relationship studies.

## CURRENT POSITION

*September 2021 – to date* JSPS Fellow Post-doctoral researcher, Institute for Catalysis (ICAT) – Hokkaido University (JP)  
Catalytic conversion of biomass-derived products into platform chemicals. Supervisor: Prof. Kiyotaka Nakajima.

## PAST POSITIONS

*June 2018 – May 2019* Post-doctoral researcher at Cardiff Catalysis Institute (CCI) – Cardiff University (UK). Supervisor: Dr. Ceri Hammond.

*June 2019 – August 2021* Post-doctoral researcher at Institute for Catalysis (ICAT) – Hokkaido University (JP). Supervisor: Prof. Atsushi Fukuoka.

## RESEARCH TECHNIQUES

*Excellent knowledge and interpretation level* Gas Chromatography, High Performance liquid chromatography, UV-Vis spectroscopy (*in situ* DRUV), IR spectroscopy (*in situ* DRIFT), Raman spectroscopy, Mass spectroscopy, Vapour and gas adsorption isotherm techniques, thermo-gravimetric analysis, temperature-programmed desorption analysis, X-ray diffraction spectroscopy, liquid state NMR and Solid state MAS NMR.

*Good knowledge and interpretation level* Scanning electron microscopy, Transmission electron microscopy, X-ray photoelectron spectroscopy, X-ray adsorption spectroscopy (experience in several *ex situ* and *in situ* experiments at the Diamond light source Synchrotron at Harwell, UK).

## EDUCATION

*Doctorate / Ph.D.* Ph.D. in Heterogeneous Catalysis.  
*2015 - 2018* Cardiff Catalysis Institute (CCI), School of Chemistry, Cardiff University (UK).

*“Continuous Biomass Valorisation with Sn-containing Zeolite Catalysts”.*

Development of continuous flow processes for studying catalyst deactivation by means of either *ex situ* and *operando* techniques. Study of the effect of reaction parameters for mitigating and improve catalyst lifetime during continuous glucose isomerisation and lactic acid production.

Collaboration with the Danish Company “Haldor Topsøe”.

Supervisor: Dr. Ceri Hammond.

*Short term international experience* Exchanged research Ph.D student at KU Leuven (BE) at the “Centre for surface chemistry and catalysis”.  
*Oct 2016 – Dec 2016* Project: “Synthesis of Fe-containing graphene layers catalyst for the abatement of N<sub>2</sub>O greenhouse gas”.  
Supervisor: Prof. Bert Sels.

*BS and MS* University of Bologna (IT), Industrial chemistry department.  
*2008-2013* Thesis title: "Reaction of different electrophile substrate with highly nucleophilic aminothiazole derivatives".  
*Grade: 110 / 110* Supervisor: Prof. C. Boga.

**TEACHING**

*Cardiff University* Practical lab Module CH4106 Introduction to Analytical Chemistry (6 hours, Oct 2018)  
*2018-2019* Practical lab Module CH4104 Introduction to the Solid State (18 hours, Mar 2019)

**COMMUNICATION SKILLS**

*Oral presentations* "124<sup>th</sup> CATSJ Meeting" 16<sup>th</sup>-18<sup>th</sup> September 2020, Shizuoka (Japan) (web conference)  
 "N.I.C.E. (Nature Inspire Chemistry Engineer)" 14<sup>th</sup>-17<sup>th</sup> October 2018, Nice (France)  
 "6<sup>th</sup> EuCheMS Chemistry Congress" 11<sup>th</sup>-15<sup>th</sup> September 2016 – Seville (Spain)  
 "Applied Catalysis and Biocatalysis Reaction Engineering" 3<sup>rd</sup>-4<sup>th</sup> September 2015, Bath (UK)

**AWARDS AND ACHIEVEMENTS**

*Personal fellowship* JSPS post-doctoral standard fellowship awarded by "Japan Society for the Promotion of Science".  
*2021-to date* Institute: Hokkaido University. Supervisor: Prof. Kiyotaka Nakajima.

*Scholarship*  
*2014-2015*

"Toso Montanari" scholarship awarded by University of Bologna.  
 Institute: Cardiff University, Cardiff Catalysis Institute (CCI).  
 Supervisor: Prof. N. Dimitratos, Dr. C. Hammond.

*Chemistry state exam*  
*2013*

Chemistry state exam for the recognition of professional competence as chemist.  
 Exam held at the University of Ferrara (IT) in the second session 2013.

**PUBLICATIONS**

S. Noro, X. Zheng, A. Wang, K. Suzuki, S. Kosasang, S. Horike, **D. Padovan**, K. Nakajima, H. Sato, K. Takahashi, T. Nakamura, *Inorg. Chem.* **2022**, 61, 8, 3379-3386.  
 L. Botti, **D. Padovan**, R. Navar, S. Tolborg, J. S. Martinez-Espin, C. Hammond, *ACS Catal.* **2020**, 10, 11545-11555.  
 L. Botti, S. A. Kondrat, R. Navar, **D. Padovan**, J. S. Martinez-Espin, S. Meier, C. Hammond, *Angew. Chem. Int. Ed.* **2020**, 59, 20017-20023.  
**D. Padovan**, H. Kobayashi, A. Fukuoka, *ChemSusChem* **2020**, 13, 3594-3598.  
 M. Caiti, **D. Padovan**, C. Hammond, *ACS Catal.* **2019**, 9, 10, 9188-9198.  
 L. Botti, R. Navar, S. Tolborg, J. S. Martinez-Espin, **D. Padovan**, E. Taarning, C. Hammond, *Top Catal.* **2018**, 1-14.  
**D. Padovan**, L. Botti, C. Hammond, *ACS Catal.* **2018**, 8, 7131-7140.  
 C. Hammond, **D. Padovan**, G. Tarantino, *R. Soc. Open Sci.* **2018**, 5:171315.  
**D. Padovan**, S. Tolborg, L. Botti, E. Taarning, I. Sabada, C. Hammond, *React. Chem. Eng.* **2018**, 3, 155-163. (+front cover).  
**D. Padovan**, A. Al-Nayili, C. Hammond, *Green Chem.* **2017**, 19, 2846-2854.  
**D. Padovan**, C. Parsons, M. S. Grasina, C. Hammond, *Green Chem.* **2016**, 18, 5041-5049.  
 C. Boga, S. Cino, G. Micheletti, **D. Padovan**, L. Prati, A. Mazzanti, N. Zanna, *Org. Biomol. Chem.* **2016**, 14, 7061-7068.  
 C. Hammond, **D. Padovan**, A. Al-Nayili, P. P. Wells, E. K. Gibson, N. Dimitratos, *ChemCatChem.* **2015**, 7, 3322-3331.

**PROFESSIONAL SKILLS**

- Independent and team worker, as required by the circumstances.
- Problem solving skill, analytical reasoning and critical thinking as tool to successfully achieve the aim of the project.
- Developed leadership skills through supervision of undergraduate, postgraduate and PhD students.
- Able to communicate with third party suppliers and engineers for providing hardware and software for in-house building of reactors and instrumentations.
- Proficient communication skills developed through periodic meeting with academic supervisors and industrial sponsors, as well as presentation at international conference and academic visitors.
- Proficiency on writing skills grown through years of experience in writing periodic scientific reports, power point presentation, peer-reviewed research articles, research proposal and thesis.
- IT knowledge of Microsoft office package, Origin, ChemDraw, AutoCAD and many different software of scientific analytical equipment.