

Curriculum Vitae

Stephanie Fest-Santini

1. Personal information

Surname	Fest-Santini
First name	Stephanie
Nationality	German
Languages	German, English, Italian
Date of birth	04/01/1981
Gender	female
Profession	Associate Professor
Title	Doktor-Ingenieur (Dr.-Ing.) third cycle degree
ORCID ID	0000-0002-0613-390X

2. Organisation tasks

Date	since 09/2025
task	Member of the team for International Relations, Non-EU and ERASMUS mobility of the Department of Engineering and Applied Sciences
Date	since 10/2024
task	Member of the teaching committee of the Department of Engineering and Applied Sciences
Date	since 09/2024
task	Contact person for the Double Degree program between Mechatronics and Smart Technology Engineering (University of Bergamo) and Mechatronics (University of Stuttgart)
Date	09/2021-06/2025
task	Board member of the Linguistic Centre of the University of Bergamo

3. Work experience

Date	since 01/09/2024
Institution	University of Bergamo, Department of Engineering and Applied Sciences Viale Marconi 5, 24044 Dalmine (BG), Italy
Position	Associate Professor scientific area "ING-IND/10 - Fisica Tecnica Industriale"
Date	since 07/09/2021
Institution	Wiley Periodicals LLC, 111 River St, Hoboken, NJ 07030, USA
Position	Associate Editor of <i>Heat Transfer</i>
Date	01/09/2021-31/08/2024
Institution	University of Bergamo, Department of Engineering and Applied Sciences Viale Marconi 5, 24044 Dalmine (BG), Italy
Position	Fixed-term Researcher type B scientific area "ING-IND/10 - Fisica Tecnica Industriale"
Date	01/03/2021-31/08/2021
Institution	University of Bergamo, Department of Engineering and Applied Sciences Viale Marconi 5, 24044 Dalmine (BG), Italy
Position	Visiting Professor for Energy saving techniques in buildings

Date 01/02/2018-31/01/2021
 Institution University of Bergamo
 Department of Management Engineering, Information and Production
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Fixed-term Researcher type A scientific area "ING-IND/10 - Fisica Tecnica Industriale"

Date 01/12/2014-31/08/2017
 Institution University of Bergamo
 Department of Management Engineering, Information and Production
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Postdoctoral Researcher
 X-ray micro tomography characterization of micro-features for thermodynamic application obtained by means of micro fabrication technologies

Date 01/05/2013-30/09/2014
 Institution University of Bergamo, Department of Engineering
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Postdoctoral Researcher (Post-Doc)
 DROPLIN: thermofluiddynamic on DROP-Liquid Interface

Date 06/02/2013-05/04/2013
 Institution University of Bergamo, Department of Engineering
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Intellectual works contract (Prestazione d'opera intellettuale)
 Fuel injector research for sustainable technology

Date 01/12/2010-30/11/2012
 Institution University of Bergamo, Department of Industrial Engineering
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Postdoctoral Researcher
 Non-Newtonian Drop Experiments And Modeling's: studi della termo-fluido dinamica dei fluidi non-Newtoniani nell'interazione con mezzi porosi

Date 01/03/2010-30/11/2010
 Institution University of Bergamo, Department of Industrial Engineering
 Viale Marconi 5, 24044 Dalmine (BG), Italy
 Position Postdoctoral research fellow (borsista)
 Innovative techniques for experimental analysis and simulation of multiphase flow in complex systems

Date 01/11/2009-31/01/2010
 Institution Otto-von-Guericke University Magdeburg
 Institute of Fluid Dynamics and Thermodynamics
 Universitätsplatz 2; 39106 Magdeburg, Germany
 Position Postdoctoral research fellow (borsista)
 Spray cooling above the Leidenfrost point

Date 01/09/2007-31/12/2007
 Institution Otto-von-Guericke University Magdeburg
 Academic International Relations Office
 Universitätsplatz 2; 39106 Magdeburg, Germany

Position Supervision of a foreign PhD-student (appointed by contract)
Implementation of an inverse heat conduction problem in Matlab based on experimental infrared data

Date 01/02/2004-31/03/2005
Institution Max Planck Institute for Dynamics of Complex Technical Systems
Sandtorstraße 1, 39106 Magdeburg, Germany

Position Research assistant
Investigation on phase disaggregation to determine the activity coefficient of the ternary system

Date 01/05/2003-30/06/2003
Institution Otto-von-Guericke University Magdeburg
Institute of Fluid Dynamics and Thermodynamics
Universitätsplatz 2, 39106 Magdeburg, Germany

Position Research assistant
Investigation on vaporization in compact heat exchangers with catalytic combustion

4. Education and Training

Date 12/2005-10/2009
Institution Otto-von-Guericke University Magdeburg, Magdeburg, Germany
GRK 828 "Micro-Macro-Interactions in Structured Media and Particle Systems"

Title Doktor-Ingenieur (Dr.-Ing.) third cycle degree
Thesis Title: Heat transfer during cooling processes with intermittent sprays above the Leidenfrost point

Date 02/2006-07/2006
Institution University of Bergamo
Viale Marconi 5, 24044 Dalmine (BG), Italy
FP6 Marie Curie Program "Two-phase Flows: Spray/Wall interaction processes"

Date 10/1999-12/2005
Institution Otto-von-Guericke University Magdeburg, Magdeburg, Germany
Title Diplom-Ingenieur (Dipl.-Ing.) second cycle equivalent to Master's degree
Thesis Title: Spray-Wall-Interactions on Micro Level

5. Scientific publications

International journals and book chapters

- [1] Lorenzi, S., D'Urso, G., Nani, L., Quarto, M., Fest-Santini, S., Pastore, T., 2025, Effect of the deposition strategy and endogenous defect pattern on the plastic deformability and the fracture mechanism of 316L stainless steel obtained using material extrusion, *Engineering Failure Analysis*, 171, 109395
- [2] Santini, M., Fest-Santini, S., Cossali, G.E., Casatta, N., Lupo, C., A novel methodology for diffusion coefficient determination in porous media by X-ray high-resolution radiography, 2024, *European Physical Journal Plus*, Special Issue Focus Point on Recent Advances in X-ray and Neutron Imaging for Cultural Heritage and Biomedicine, 139(8), 696
- [3] Ackermann, S., Fest-Santini, S., Veyskarami, M., Helmig, R., Santini, M., 2023, Experimental validation of a coupling concept for drop formation and growth onto porous materials by high-resolution X-ray imaging technique, *International Journal of Multiphase Flow*, vol 160, 104371
- [4] Carrozza, A., Lorenzi, S., Carugo, F., Fest-Santini, S., Santini, M., Marchese, G., Barbieri, G., Cognini, F., Cabrini, M., Pastore, T., 2023, A comparative analysis between material extrusion and other additive manufacturing techniques: Defects, microstructure and corrosion behavior in nickel alloy 625, *Materials and Design*, vol 225, 111545
- [5] Bonalumi, S., Crua, C., Savina, I.N., Nathan Davies, N., Habstesion, A., Santini, M., Fest-Santini, S., Sandeman, S., 2021, Bioengineering a cryogel-derived bioartificial liver using particle image velocimetry defined fluid dynamics, *Materials Science & Engineering C* 123, 111983
- [6] Haide, R., Fest-Santini, S., Santini, M., 2022, Use of X-ray micro computed tomography for the investigation of drying processes in porous media: A review, *Drying Technology*, 40(9), pp. 1731–1744
- [7] Fest-Santini, S., Steigerwald, J., Santini, M., Cossali, G., Weigand, B., 2021, Multiple drops impact onto a liquid film: Direct numerical simulation and experimental validation, *Computers & fluids* 214, 104761
- [8] Cristiani, P., Goglio, A., Marzorati, S., Fest-Santini, S., Schievano, A., 2020, Biochar-Terracotta Conductive Composites: New Design for Bioelectrochemical Systems, *Frontiers in energy research* 8, 581106
- [9] Fest-Santini, S., 2020, Image Processing of Two-Phase Data for Drop-Surface Interaction Obtained by X-Ray Microtomography, *Fluid mechanics and its applications* 121, pp. 101-111
- [10] Foltyn, P., Guttman, M., Schneider, M., Fest-Santini, S., Wildenschild, D., Weigand, B., 2020, Fabrication and Evaluation Methods of Micro-structured Surfaces for Droplet Impact Experiments, *Fluid mechanics and its applications* 121, pp. 71-86
- [11] Ackermann, S., Helmig, R., Fest-Santini, S., 2020, Upscaling of Coupled Free-Flow and Porous-Medium-Flow Processes, *Fluid mechanics and its applications* 121, pp. 139-148
- [12] Guilizzoni, M., Santini, M., Fest-Santini, S., 2019, Synchronized Multiple Drop Impacts into a Deep Pool, *Fluids* 4, 414
- [13] Marzorati, S., Goglio, A., Fest-Santini, S., Mombelli, D., Villa, F., Cristiani, P., Schievano, A., 2019, Air-Breathing Bio-cathodes Based on Electro-Active Biochar from Pyrolysis of Giant Cane Stalks, *International Journal of Hydrogen Energy* 44 (9), pp.4496-4507
- [14] Guilizzoni, M., Santini, M., Fest-Santini, S., Lorenzi, M., 2017, Characterization of highly hydrophobic textiles by means of X-ray microtomography, wettability analysis and drop impact, *Journal of Physics: Conference Series* 923(1), 012013
- [15] Santini, M., Marzorati, S., Fest-Santini, S., Trasatti, S., Cristiani, P., 2017, Carbonate scale deactivating the biocathode in a microbial fuel cell, *Journal of Power Sources* vol. 356, p. 400-407

- [16] Santini, M., Fest-Santini S., Cossali, G.E., 2017, Experimental study of vortices and cavities from single and double drop impacts onto deep pools, *Journal of Mechanics, B/Fluids* vol. 62, p. 21-31
- [17] Santini, M., Fest-Santini, S., Foltyn, P., 2016, On the local mass transfer rates around arbitrary shaped particles calculated by X-ray computed microtomography: prospective for a novel experimental technique, *International Communications in Heat and Mass Transfer* 79, p. 135-139
- [18] Santini, M., Guilizzoni, M., Fest-Santini, S., Lorenzi, M. 2015, A novel technique for investigation of complete and partial anisotropic wetting on structured surface by X-ray microtomography, *Review of Scientific Instruments* vol. 86 (2), Article number 023708
- [19] Santini, M., Guilizzoni, M., Lorenzi, M., Atanassov, P., Marsili, E., Fest-Santini, S., Cristiani, P., Santoro, C., 2015, Three-dimensional X-ray microcomputed tomography of carbonates and biofilm on operated cathode in single chamber microbial fuel cell, *Biointerphases* vol. 10 (3), p. 1-9
- [20] Guilizzoni, M., Santini, M., Lorenzi, M., Knisel, V., Fest-Santini, S., 2014, Micro computed tomography and CFD simulation of drop deposition on gas diffusion layers, *Journal of Physics: Conference Series* vol. 547, Article number 012028
- [21] Santini, M., Guilizzoni, M., Fest-Santini, S., 2013, X-ray computed microtomography for drop shape analysis and contact angle measurements, *Journal of Colloid and Interface Science* vol. 409, p. 204-210
- [22] Santini, M., Fest-Santini, S., Cossali, G.E., 2013, LDV characterization and visualization of the liquid velocity field underneath an impacting drop, *Experiments in Fluids*, vol. 54, Article number 1593

Patents

- [23] Italian Patent (MI2013A000424): UTENSILE PER LA FORMAZIONE E IL DISTACCO DI GOCCE DI FLUIDO IN CONDIZIONI SUPERCRITICHE
- [24] Patent application for industrial invention number 102023000019599 dated September 22, 2023, entitled SISTEMA E METODO PER LA PROCESSAZIONE DI CAMPIONI BIOLOGICI, inventors: M. Santini, S. Fest-Santini, G. Cossali, N. Casatta, C. Lupo

Books

- [25] Fest-Santini, S., Santini, M., 2019, *Esercizi risolti e commentati di fisica tecnica*, La Dotta, Bologna, Italy, ISBN 978-88-98648-68-9

6. Participation in research projects

20/12/2010 – 31/10/2009	Research training group GRK 828 “Micro-Macro-Interactions in Structured Media and Particle Systems”, Otto-von-Guericke University Magdeburg (DE)
30/01/2006 – 31/07/2006	FP6 Marie Curie Program “Two-phase Flows: Spray/Wall interaction processes”, University of Bergamo (IT)
01/10/2010 – 30/09/2012	European Project “Fluid/porous X-ray micro-tomography” within the frame of Regione Lombaria call for Technological and Scientific Cooperation Agreements
01/10/2016 – 31/12/2025	International Research training group GRK 2160 “Droplet Interaction Technologies”
01/01/2018 – 31/12/2021	Collaborative Research Centre CRC 1313 “Interface-Driven Multi-Field Processes in Porous Media - Flow, Transport and Deformation”
since 12/2021	3A-Italy Circular and Sustainable Made in Italy - MICS (3A-ITALY) Pilot 3.5 “Study, application and characterization of eco-friendly solutions for textile finishing”, national project PNRR, project number PE_00000004

7. Participation in industrial research projects

2010	Omet S.r.l. (IT) investigation of convection drying processes with impinging air jets
2012	Cimbali Group S.p.A. (IT) investigation of the atomization process for producing coffee crème
2013 – 2016	Cimbali Group S.p.A. (IT) investigation of the hydraulic resistance of the coffee bed based on X-ray microCT
2015	University of Stuttgart (DE) X-ray microCT based analysis for moisture trapped in porous structures
2016 – 2017	Brembo S.p.A. (IT) X-ray microCT based analysis of brake discs
2016 – 2019	BP International (UK) a) developing of an microCT based analysis method and strategy for the morphological characterization of Diesel fuel injector; b) investigation on visualization of internal fuel deposit caused by cavitation
2018	Cimbali Group S.p.A. (IT) analysis of influence parameters of espresso coffee extraction
2019	BP International (UK) morphological characterization of Gasoline fuel injectors
2020	Kardion GmbH (DE) two-phase microCT analysis of soft matter coated impellers
2021	Diapath S.p.A (IT) investigation of diffusion in biological, porous matter by X-ray microCT
2022	Elframo S.p.A. (IT) hydrodynamic audit of the washing and rinsing system of a professional Elframo dishwasher
2023-204	BP International (UK) a) developing of an microCT based analysis method and strategy for the morphological characterization of Gasoline fuel injector

8. Responsibility of industrial research projects

- 2024 Istituto Ricerche Farmacologiche Mario Negri (IT) X-ray microtomography research of histological samples
- 2025 - 2026 BP International (UK) morphology characterization of Gasoline fuel injectors and deposit visualization

9. Organisation of international workshops

- since 2017 annual DIPSI workshop, Bergamo

10. Awards

The journal article “Three-dimensional X-ray microcomputed tomography of carbonates and biofilm on operated cathode in single chamber microbial fuel cell” was selected as FEATURED ARTICLE and for the Journal cover in *Biointerphases* 10 (3) 2015

2011 Paul Eisenklam Travel Award

The conference contribution “LDV characterization of the liquid velocity field underneath an impacting drop” in 16th International Symposium on Laser Application to Fluid Mechanics, 9–12 July 2012, Lisbon, Portugal” was selected to be published in a special issue of the *Journal Experiments in Fluids*

The conference contribution “Effect of wall effusivity on thermal induced secondary atomisation of single drop impacting on a tilted surface” was awarded as the 3rd best article in 10th International Conference on Liquid Atomization and Spray Systems, 27th August – 1st September, Kyoto, Japan

11. Teaching activities in doctoral courses and research positions at international research institutions

- 01/11/2009 – 31/01/2010 Post-doc fellowship for the research project “Heat transfer during intermittent spray cooling” at the Institute of Fluid Dynamics and Thermodynamics, Otto-von-Guericke University Magdeburg (DE)
- 11/11/2011 Invited lecturer “Drop impacts: basics, experiments and measurement techniques” at the doctoral school of the research training group GRK 1554 “Micro-Macro-Interactions of structured Media and Particle Systems”, Otto-von-Guericke University Magdeburg (DE)
<https://www.grk1554.ovgu.de/home/Events/Lectures/Lectures+2011.html>
- 04/06/2012 Invited lecturer “Drops and sprays: experiments as basis for flow prediction and simulation” at the doctoral school of the research training group GRK 1554 “Micro-Macro-Interactions of structured Media and Particle Systems”, Summer School 2012 Berlin (DE), Otto-von-Guericke University Magdeburg (DE)
<https://www.grk1554.ovgu.de/home/Events/Summer+School+Berlin+2012.html>
- 13/12/2012 Invited lecturer “Drop Impact into Deep Pool: Flow Measurements” at the doctoral school of the Collaborative Research Center Transregio 75 (SFB-TRR 75) “Droplet Dynamics Under Extreme Ambient Conditions”, University of Stuttgart (DE)
<https://www.sfbtrr75.de/index.php/en/cooperation/guest-scientists>

12. Teaching activities in Bachelor's and Master's level degree courses

2007-2009	Lectures in Technical Thermodynamics, Otto-von-Guericke-University Magdeburg, Germany
2012-1014	Tutoring in Technical Physics, University of Bergamo, Italy
since 2012	Cultor of the Matter Technical Physics, University of Bergamo, Italy
since 2016	Cultor of the Matter Technical Physics and HVAC Systems as well as Energy Saving Techniques in Buildings, University of Bergamo, Italy
since 2018	Lectures in Energy Saving Techniques in Buildings, University of Bergamo, Italy
since 2019	Lectures in Technical Physics, University of Bergamo, Italy
since 2021	Lectures in Technical Physics and HVAC System, University of Bergamo, Italy

December 2025

Stephanie Fest-Santini