

PERSONAL INFORMATION

Francesco Napolitano



WORK EXPERIENCE

November 2022 – November 2023

Research fellow

National Research Council (CNR) – Institute of Polymers, Composites and Biomaterials
Via Campi Flegrei 34, 80078 Pozzuoli (NA), ITALY

Research project TARGET - addiTive mAnufactuRing for liGhtwEight jointS

- Experimental study, development and characterization of innovative joints between 3D printed metallic components and thermoplastic polymers

July 2020 - present

Co-founder and business partner

Wolffia Srl

Via Alcide De Gasperi, 45, 80133 Napoli, ITALY

June 2022 – November 2022

Research fellow

University of Naples Federico II - Department of Chemical, Materials and Industrial Production Engineering

Piazzale Vincenzo Tecchio 80, 80125 Napoli, ITALY

Research project MatEriali per tecnoLogie Avanzate - MELA

- Experimental study, development and characterization of solid state friction welding on metallic components
 - Friction Stir Welding of dissimilar Aluminum alloys
 - Component redesign for industrialization in battery pack assembly
 - Mechanical characterization of the FSW joints
 - Microstructure analysis using Scanning Electron Microscope
 - Chemical composition analysis through Energy Dispersive X-ray Analysis

Sector Technologies and manufacturing systems (ING-IND/16)

April 2021 – March 2022

Research fellow

University of Naples Federico II - Department of Chemical, Materials and Industrial Production Engineering

Piazzale Vincenzo Tecchio 80, 80125 Napoli, ITALY

Research project ADVANCED PRODUCTION SYSTEM

- Experimental characterization and analysis of metal-ceramic joints for aerospace applications
 - Microstructure analysis using Scanning Electron Microscope
 - Chemical composition analysis through Energy Dispersive X-ray Analysis
 - Mechanical characterization of the metal-ceramic joints

Sector Technologies and manufacturing systems (ING-IND/16)

July 2019 – September 2020

Researcher with fellowship

University of Naples Federico II - Department of Industrial Engineering
Piazzale Vincenzo Tecchio 80, 80125 Napoli, ITALY

Research project PON ARS01_00861 "Integrated collaborative systems for smart factory – "ICOSAF"
– BS/Ricerca/2019/ICOSAF/1

- Artificial intelligence methods for real-time decisions support

Sector Technologies and manufacturing systems (ING-IND/16)

November 2015 – October 2018

PhD Student

University of Naples Federico II - Department of Chemical, Materials and Industrial Production Engineering

Piazzale Vincenzo Tecchio 80, 80125 Napoli, ITALY

- PhD research in Industrial Processes and Products
- Development of the PhD research thesis on Sensor Monitoring of Machining Processes:
 - Metallurgy of Titanium
 - Neural networks development for numerical control machines
 - Sensor signals monitoring and analysis
 - Time domain and frequency domain statistical analysis
 - Software and computer application programming

Sector Technologies and manufacturing systems (ING-IND/16)

March 2015 – September 2015

Trainee

GF Machining Solutions (Agie Charmilles)

Rue du Pré-de-la-Fontaine 8, 1217 Meyrin 1, Geneva, SWITZERLAND

- Erasmus + Traineeship
- Development of the Master thesis on EDM and WEDM processes:
 - Surface roughness evaluation
 - Application development for mobile device
 - Sensor signals monitoring and analysis
 - Surface defects recognition and evaluation
 - Workpiece machining
 - G-code programming

Sector R&D Wire Electro-Discharge Machining

EDUCATION AND TRAINING

November 2015 – October 2018

PhD degree in Industrial Processes and Products

EQF level 8

University of Naples Federico II - Department of Chemical, Materials and Industrial Production Engineering

Topics:

- Entrepreneurial analysis of doctorate research
- Slow gel behaviour
- Paper composition, reviewing and submission
- From biomass to bio-based materials
- Surface treatments of materials
- Strategical management of the innovation
- Vibrational spectroscopy
- Systems Engineering
- Industry 4.0

PhD Thesis

Title: "SMART SENSOR MONITORING IN MACHINING OF DIFFICULT-TO-CUT MATERIALS"

Supervisor: Prof. Roberto Teti, Department of Chemical, Materials and Industrial Production Engineering

Co-supervisors: Dr. Alessandra Caggiano, Department of Chemical, Materials and Industrial Production Engineering.

October 2012 – October 2015

Master degree in Mechanical Engineering (Curriculum on Manufacturing Engineering) – LM33

EQF level 7

University of Naples Federico II

Topics:

- Management of industrial production
- Special technologies
- Corrosion and protection of materials
- Technique of welding and joints
- Project management in industrial production
- Computer aided manufacturing
- Geometric modelling and virtual prototyping

Master Thesis

Title: "PRODUCT AND PROCESS CONTROL FOR ZERO DEFECT MANUFACTURING IN ELECTRICAL-DISCHARGE MACHINING"

Supervisor: Prof. Roberto Teti, Department of Chemical, Materials and Industrial Production Engineering

Co-supervisors: Dr. Alessandra Caggiano, Department of Chemical, Materials and Industrial Production Engineering, Dr. Roberto Perez, GF Machining Solutions.

Final grades: 104/110

September 2008 – October 2012

Bachelor degree Mechanical Engineering – L09

EQF level 6

University of Naples Federico II

- Industrial technical drawing
- Chemistry
- Mechanical technology
- Materials
- Technology of unconventional materials
- Machines
- Applied mechanics

Bachelor Thesis

Title: "TECNICHE DI GIUNZIONE DEI MATERIALI COMPOSITI: L'INCOLLAGGIO"

Supervisor: Prof. Luigi Nele, Department of Chemical, Materials and Industrial Production Engineering.

Final grades: 93/110

PATENTS

National patent

Registro ufficiale U 0342803 10/11/2023

Patent: N. 102021000027332**Owner:** Wolffia srl**Inventors:** I. Improta, B. Palmieri, F. Napolitano**Title:** DISPOSITIVO PER LA STIMA DELLA VITA UTILE RESIDUA DI MATERIALI COMPOSITI**Classification:** G01N33**Deposited:** 25/10/2021

National patent

Registro ufficiale U 0342805 10/11/2023

Patent: N. 102021000027386**Owner:** Wolffia srl**Inventors:** I. Improta, B. Palmieri, F. Napolitano**Title:** DISPOSITIVO PER IL RECUPERO DI SFRIDI DI PRODUZIONE DI MATERIALE COMPOSITO**Classification:** B29B**Deposited:** 25/10/2021

National patent

Registro ufficiale U 03429350 18/11/2023

Patent: N. 102021000027383**Owner:** Wolffia srl**Inventors:** I. Improta, B. Palmieri, F. Napolitano**Title:** MACCHINA PREIMPREGNATRICE**Classification:** B29C**Deposited:** 25/10/2021

PERSONAL SKILLS AND COMPETENCES

Mother tongue(s)

Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	B2	B2	C1
French	B2	B2	B1	B1	A2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Awards and Prizes

- "Premio Innovazione 4.0" – 1st place – WOLFFIA srl
- Startup competition "StartCup Campania 2020" – 3rd place – Startup project: WOLFFIA srl
- Startup competition "Atena Startup Battle" – 3rd place – Startup project: WOLFFIA
- 7th CRSMed – High social impact enterprise award – WOLFFIA
- Startup competition "StartCup Campania 2019" – FINAL stage – Startup project: WOLFFIA

Collaborations with academic and industrial partners in national and international projects

- National Project TARGET (PRIN Prot. 2020E3XL47) on "additive manufacturing for lightweight joints" (2021-2024)
- National Project ICOSAF (PON ARS01_00861) on "Integrated collaborative systems for smart factory" (2014-2020)
- National Project CAPRI (PON03PE_00135_1, Campania Aerospace District - DAC) on "Landing Gear System with intelligent actuation" (2014-2016)
- National Project STEP FAR (PON03PE00129_1, Campania Aerospace District - DAC) on "Development of eco-compatible materials and technologies in drilling and trimming processes for robotized assembly" (2014-2016)

Scientific publications

- Napolitano, F., Russo, P., 2023, Mechanics of Polymers and Composites. Reference Module in Materials Science and Materials Engineering, Elsevier.
ISBN 9780128035818
Doi: <https://doi.org/10.1016/B978-0-323-90646-3.00002-2>
- El Hassanin, A., Silvestri, A. T., Napolitano, F., Borrelli, D., Caraviello, A., Astarita, A., 2023, Investigation of the laser-related parameters in Laser-Powder Bed Fusion of Inconel 718-Cu blends at fixed Volumetric Energy Density. Journal of Manufacturing Processes, 99, pp. 456-468.
Doi: 10.1016/j.jmapro.2023.05.068
- El Hassanin, A., Silvestri, A. T., Napolitano, F., Caraviello, A., Borrelli, D., Astarita, A., 2023, In Situ Alloying through Laser-Powder Bed Fusion of a 60% Inconel718 - 40% Cu Powders Mixture. Metallography, Microstructure, and Analysis, 12 (3), pp. 413-426.
Doi: 10.1007/s13632-023-00942-6
- Rippa, M., Pagliarulo, V., Napolitano, F., Valente, T., Russo, P., 2023, Infrared Imaging Analysis of Green Composite Materials during Inline Quasi-Static Flexural Test: Monitoring by Passive and Active Approaches. Materials, 16 (8), 3081.
Doi: 10.3390/ma16083081
- Crupi V., Epasto G., Napolitano F., Palomba G., Papa I., Russo P., 2023, Green Composites for Maritime Engineering: A Review. Journal of Marine Science and Engineering, 11 (3), 599.
Doi: 10.3390/jmse11030599
- Papa I., Langella A., Napolitano F., Russo P., 2023, Comparison of FDMed and compression molded biocomposites in polylactic acid and food flour waste. Journal of Composite Materials, 57 (29), pp. 4521-4533.
Doi: 10.1177/00219983231211994
- Cozzolino E., Napolitano F., Astarita A., Lopresto V., Papa I., Squillace A., 2023, Sustainability of Fused Deposition Modeling: The Role of the Plate Material. Lecture Notes in Mechanical Engineering, pp. 99-105.
Doi: 10.1007/978-3-031-28547-9_12
- Papa I., Langella A., Napolitano F., Russo P., 2023, Thermal and mechanical properties of FDMed biocomposites in polylactic acid and food flour waste. Materials Research Proceedings, 28, pp. 1879-1886.
Doi: 10.21741/9781644902479-203
- Napolitano F., El Hassanin A., Scherillo F., Squillace A., 2023, FSW of extruded and additively manufactured parts for automotive components. Materials and Manufacturing Processes, 38 (11), pp. 1445-1454.
Doi: 10.1080/10426914.2023.2176878
- De Martino S., Battisti M., Napolitano F., Palladino A., Serpico L., Amendola E., Martone A., De Girolamo P., Squillace A., Dardano P., De Stefano Luca., Dello Iacono S., 2022, Effect of microneedles shape on skin penetration and transdermal drug administration. Biomaterials Advances, 142, article number 213169.
Doi: 10.1016/j.bioadv.2022.213169

- Napolitano F., Scherillo F., El Hassanin A., Esperto V., Carlone P., Squillace A., Casarin R., Verde C., 2022, Preliminary Study of FSW Process of Dissimilar Aluminium Alloys in Battery Pack Assembly for Hybrid Vehicles Production. *Key Engineering Materials*, 926, pp. 1549-1555.
Doi: 10.4028/p-7x9l69
- El Hassanin A., Napolitano F., Trimarco C., Manco E., Scherillo F., Borrelli D., Caraviello A., Squillace A., Astarita A., 2022, Laser-Powder Bed Fusion of Inconel 718 Alloy: Effect of the Contour Strategy on Surface Quality and Sub-Surface Density. *Key Engineering Materials*, 926, pp. 280-287.
Doi: 10.4028/p-u9ydck
- Napolitano, F., Cozzolino, E., Papa, I., Astarita, A., Squillace, A., 2022, Experimental integrated approach for mechanical characteristic optimization of FDM-printed PLA in an energy-saving perspective. *International Journal of Advanced Manufacturing Technology*, 121 (5-6), pp. 3551–3565.
Doi: 10.1007/s00170-022-09535-z
- El Hassanin, A., Silvestri, A. T., Napolitano, F., Scherillo, F., Caraviello, A., Borrelli, D., Astarita, A., 2021, Laser-powder bed fusion of pre-mixed Inconel718-Cu powders: An experimental study. *Journal of Manufacturing Processes*, 71, pp. 329-344.
Doi: 10.1016/j.jmapro.2021.09.028
- Tammaro, D., Henry Detry, A. L., Landolfi, L., Napolitano, F., Villone, M. M., Maffettone, P. L., Squillace, A., 2021, Bio-Lightweight Structures by 3D Foam Printing. 6th International Forum on Research and Technology for Society and Industry, RTSI 2021 – Proceedings, pp. 47-51.
Doi: 10.1109/RTSI50628.2021.9597272
- Caggiano, A., Napolitano, F., Teti, R., 2021, Hierarchical cluster analysis for pattern recognition of process conditions in die sinking EDM process monitoring. *Procedia CIRP*, 99, pp. 514-519.
Doi: 10.1016/j.procir.2021.03.071
- Caggiano, A., Napolitano, F., Teti, R., Bonini, S., Maradia, U., 2020, Advanced die sinking EDM process monitoring based on anomaly detection for online identification of improper process conditions. *Procedia CIRP*, 88, pp. 381-386.
Doi: 10.1016/j.procir.202005.066
- Caggiano, A., Napolitano, F., Nele, L., Teti, R., 2019, Study on Thrust Force and Torque Sensor Signals in Drilling of Al/CFRP Stacks for Aeronautical Applications. *Procedia CIRP*, 79, pp. 337-342.
Doi: 10.1016/j.procir.2019.02.079
- Caggiano, A., Angelone, R., Napolitano, F., Nele, L., Teti, R., 2018, Dimensionality Reduction of Sensorial Features by Principal Component Analysis for ANN Machine Learning in Tool Condition Monitoring of CFRP Drilling. *Procedia CIRP*, 78, pp. 307-312.
Doi: 10.1016/j.procir.2018.09.072
- Caggiano, A., Napolitano, F., Nele, L., Teti, R., 2018, Multiple sensor monitoring for tool wear forecast in drilling of CFRP/CFRP stacks with traditional and innovative drill bits. *Procedia CIRP*, 67, pp. 404-409.
Doi: 10.1016/j.procir.2017.12.233
- Caggiano, A., Napolitano, F., Teti, R., 2017, Dry Turning of Ti6Al4V: Tool Wear Curve Reconstruction Based on Cognitive Sensor Monitoring, *Procedia CIRP*, 62, pp. 209-214.
Doi: 10.1016/j.procir.2017.03.046

Participation in National and International Conferences

- 26th International Conference on Material Forming - ESAFORM '23, Krakow, Poland, 19-21 April 2023;
- 25th International Conference on Material Forming - ESAFORM '22, Braga, Portugal, 27-29 April 2022;
- 14th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '20, Online edition, 15- 17 July 2020;
- 13th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '19, Ischia, Italy, 17- 19 July 2019;
- 12th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '18, Ischia, Italy, 18- 20 July 2018;
- 11th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '17, Ischia, Italy, 19- 21 July 2017;
- 10th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '16, Ischia, Italy, 20- 22 July 2016;

Organization of Conferences

- 14th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '20, Online edition, 15- 17 July 2020;
- 13th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '19, Ischia, Italy, 17- 19 July 2019;
- 12th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '18, Ischia, Italy, 18- 20 July 2018;
- 11th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '17, Ischia, Italy, 19- 21 July 2017;
- 10th CIRP Conf. on Intelligent Computation in Manufacturing Engineering - CIRP ICME '16, Ischia, Italy, 20- 22 July 2016;

Professional memberships

- Member of the “Ordine degli Ingegneri della Provincia di Napoli”, Italy

Communication skills

- good communication skills gained through my group work experiences in the university research projects
- very good aptitude to group working and team building gained through my people interfacing experience in the research and association activities
- good leadership skills gained through my presidential experience in the association board

Organisational / managerial skills

- good resource management (treasurer experience in a local cultural association)
- good planning skills (management experience in national board of an international association)
- good people management (president experience in regional board of an international association)
- good negotiation skills (gadget companies relationship manager experience in national board of an international association)

Computer skills

- Microsoft Office™ (European Computer Driving Licence – ECDL)
- Matlab™ programming
- 3D Modelling and preparation:
 - SolidWorks™
 - Simplify3D™
- National Instrument software:
 - LabView™ programming
 - Signal Express
- CNC machining programming:
 - G-code (ISO 6983)



Other skills ▪ excellent performance in team work, excellent support for colleagues, tenancy in achieving the goal (rugby player)

Driving licence ▪ A3
▪ B

Dichiarazione sostitutiva di certificazioni/dell'atto di notorietà
(Artt. 46 e 47 del D.P.R. 28 dicembre 2000, n. 445)

Il sottoscritto

NAPOLITANO FRANCESCO

a conoscenza di quanto prescritto dall'art. 76 del D.P.R. 28 dicembre 2000 n. 445, sulla responsabilità penale cui può andare incontro in caso di falsità in atti e di dichiarazioni mendaci, nonché di quanto prescritto dall'art. 75 del D.P.R. 28 dicembre 2000 n. 445, sulla decadenza dai benefici eventualmente conseguenti al provvedimento emanato sulla base di dichiarazioni non veritiere, ai sensi e per gli effetti del citato D.P.R. n. 445/2000 e sotto la propria personale responsabilità:

D I C H I A R A

che tutte le informazioni contenute nel proprio curriculum vitae sono veritiere.

Letto, confermato e sottoscritto.

Pozzuoli, li 15/12/2023

IL/LA DICHIARANTE

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