ARASH GHALAYANI ESFAHANI (sometimes spelled ISFAHANI)

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WORK EXPERIENCE

08/2021 – Present	Postdoctoral Fellow, **National Research Council (CNR) of Italy- Institute of Polymers, Composites and Biomaterials (IPCB)**, Italy
01/2020 – 08/2021	*FLOW-3D* training, in collaboration with **Flow Science, Inc.**, USA
11/2018 – 08/2019	Teacher Assistant, **Politecnico di Milano**, Italy
02/2017 – 02/2018	Visiting Graduate Researcher, Orthopaedic Hospital Research Center, **University of California - Los Angeles (UCLA)**, USA
11/2014 – 02/2017 02/2018 – 11/2018	Graduate Research Assistant, **Politecnico di Milano**, Italy

EDUCATION

11/2014 - 11/2018	**Ph.D.**, Materials Engineering, **Politecnico di Milano (Polimi)**, Italy, Advisor: Professor Luigi De Nardo
12/2012	**M.Sc.**, Materials Engineering, **Sharif University of Technology (SUT)**, Iran Advisor: Professor M. Ghorbani
06/2008	**B.Sc.**, Mechanical Engineering, **Shiraz (Pahlavi) University**, Iran Advisor: Professor M. Yaghoubi

PUBLICATIONS

2023 Ghalayani Esfahani, Arash; Sartori, Maria; Bregoli, Chiara; Fiocchi, Jacopo; Bitti, Carlo Alberto; Tuissi, Ausonio; Giavaresi, Gianluca; Presentato, Alessandro; Alduina, Rosa; De Luca, Angela; Cabrini, Alessia; De capitani, Cristina; Fini, Milena; Gruppioni, Emanuele; Lavorgna, Marino; Ronca, Alfredo; *Bactericidal Activity of Silver-Doped Chitosan Coatings via Electrophoretic Deposition on Ti6Al4V Additively Manufactured Substrates*. Polymers 2023, 15, 4130; https://doi.org/10.3390/polym15204130

2023 Cabrini, Alessia; Ghalayani Esfahani, Arash; Petraconi, Andre; Lavorgna, Marino; De Nardo, Luigi; Buonocore, Giovanna Giuliana; Andrade, Ricardo Jorge Espanhol; Cerruti, Pierfrancesco; *Ultrasonic spray deposition of PEGDE-crosslinked chitosan/graphene oxide coatings for enhancing gas barrier properties of polyhydroxyalkanoate succinate films*. Progress in Organic Coatings 2023, Vol. 183; https://doi.org/10.1016/j.porgcoat.2023.107760

2020 Ghalayani Esfahani, Arash; Altomare, Lina; Bonetti, Lorenzo; Nejaddehbashi, Fereshteh; Boccaloschi, Francesca; Chiesa, Roberto; Boschetti, Federica; Bayati, Vahid; De Nardo, Luigi; *Micro-Structured Patches for Dermal Regeneration Obtained via Electrophoretic Replica Deposition*. Applied Sciences 2020, 10(14), 5010; https://doi.org/10.3390/app10145010

2019 Ghalayani Esfahani, Arash; Soleimanzade, Mehdi; Campiglio, Chiara Emma; Federici, Angelica; Altomare, Lina; Boccaccini, Aldo R.; Draghi, Lorenza; De Nardo, Luigi; *Hierarchical Microchannel Architecture in Chitosan/Bioactive Glass Scaffolds via Electrophoretic Deposition Positive-Replica*. Journal of Biomedical Materials Research: Part A, https://doi.org/10.1002/jbm.a.36660

2019 Ghalayani Esfahani, Arash; Altomare, Lina; Varoni, Elena; Bertoldi, Serena; Farè, Silvia; De Nardo, Luigi; *Electrophoretic bottom up design of chitosan patches for Topical Drug Delivery*. Journal of Materials Science: Materials in Medicine, https://doi.org/10.1007/s10856-019-6242-x

11/2018 Ghalayani Esfahani, Arash; *Electrophoretic Deposition for Bottom-up Design of Cellular Solids in Biomedical Applications*, Ph.D. thesis, Politecnico di Milano.

2018 Ghalayani Esfahani, Arash; Lazazzera, Beth; Draghi, Lorenza; Farè, Silvia; Chiesa, Roberto; De Nardo, Luigi; Billi, Fabrizio; *Bactericidal activity of Gallium-doped chitosan coatings against staphylococcal infection*. Journal of Applied Microbiology (2018), https://doi.org/10.1111/jam.14133

2016 Varoni, Elena; Altomare, Lina; Cochis, Andrea; GhalayaniEsfahani, Arash; Cigada, Alberto; Rimondini, Lia; De Nardo, Luigi; *Hierarchic micro-patterned porous scaffolds via electrochemical replica-deposition enhance neo-vascularization*, Biomed. Mater. 11 (2016), https://doi.org/10.1088/1748-6041/11/2/025018

2014 Ghalayani Esfahani, Arash; Ghorbani, M.; *Electrophoretic deposition of Ni/SiO2 nanocomposite coating: fabrication process and tribological and corrosion properties*, Journal of Nano Research 26 (2014), 45-51, https://doi.org/10.4028/www.scientific.net/JNanoR.26.45

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2012 Ghalayani Isfahani, Arash; *Electrophoretic deposition of Ni/SiO_2 nanocomposite coating: fabrication process and tribological and corrosion properties*, M.Sc. thesis, SUT.

2008 Ghalayani Isfahani, Arash; *A feasibility study on the optimized location of a solar power plant in Iran (solar radiation equation factors across the Iranian plateau)*, B.Sc. thesis, Shiraz University.

CONFERENCES AND PROCEEDINGS

2023 Arash Ghalayani Esfahani, Maria Sartori, Chiara Bregoli, Jacopo Fiocchi, Carlo Alberto Biffi, Ausonio Tuissi, Gianluca Giavaresi, Alessandro Presentato, Rosa Alduina, Angela De Luca, Alessia Cabrini, Cristina de Capitani, Milena Fini, Emanuele Gruppioni, Marino Lavorgna, Alfredo Ronca, *Antimicrobial coatings for health and life sciences applications*. Giornate di Dipartimento 2023, Sestri Levante, Italy

2023 Alessia Cabrini, Arash Ghalayani Esfahani, Pierfrancesco Cerruti, Luigi De Nardo, Marino Lavorgna, *Ultrasonic spray deposition of bionanocomposite coating for barrier improvement of biodegradable food packaging films*. 30 years of INSTM: past, present and future of the Consortium, Brixen, Italy

2022 Arash Ghalayani Esfahani, Chiara Bregoli, Jacopo Fiocchi, Maria Sartori, Gennaro Rollo, Alessia Cabrini, Carlo Alberto Biffi, Alfredo Ronca, Andrea Sorrentino, Cristina de Capitani, Ausonio Tuissi, Marino Lavorgna, Emanuele Gruppioni, Luigi Ambrosio, *Development of Electrophoretic antibacterial coating on Ti6AL4V ELI 3D printed implants*. Giornate di Dipartimento 2022, Catania, Italy

2019 Arash Ghalayani Esfahani, Beth Lazazzera, Luigi De Nardo, Fabrizio Billi, *Bactericidal activity of Gallium-doped chitosan coatings against staphylococcal infection*. 7th International Symposium on Surfaces and Interfaces of Biomaterials, Québec City, Canada

2018 Arash Ghalayani Esfahani, Beth Lazazzera, Luigi De Nardo, Fabrizio Billi, *The bactericidal activity from gallium in the Chitosan based orthopaedic implant coatings against the staphylococcal infection*. Orthopaedic Research Society (ORS) annual meeting 2018, New Orleans, LA, USA

2017 Arash Ghalayani Esfahani, Lina Altomare, Serena Bertoldi, Silvia Farè, Roberto Chiesa, Luigi De Nardo, *Layer-by-layer electrophoretic deposition of biomedical scaffolds: novel fabrication process and material properties*, 6th International Conference on Electrophoretic Deposition: Fundamentals and Applications (EPD 2017), Gyeongju, South Korea

2017 Arash Ghalayani Esfahani, Mehdi Soleimanzade, Chiara Emma Campiglio, Lorenza Draghi, Lina Altomare, Luigi De Nardo, *Electrophoretic deposition of Chitosan/Bioglass® composite scaffolds with oriented micro patterns: Fabrication process and in vitro biological properties*. Congresso SIB 2017, Milan, Italy

2016 Elena Varoni, Lina Altomare, Arash GhalayaniEsfahani, Andrea Cochis, Alberto Cigada, Lia Rimondini, Luigi De Nardo, *Fine-tunable micropattern of porosity to promote scaffold neovascularization*. 10th WBC, Montreal, Canada

2016 Arash GhalayaniEsfahani, Lina Altomare, Alberto Cigada, Luigi De Nardo, *Fine-tunable micro-patterns in Chitosan-based scaffolds: fabrication process and material properties*, 10th WBC, Montreal, Canada

2016 Rita Sorrentino, MM Landini, Lia Rimondini, Andrea Cochis, Luigi De Nardo, Arash Ghalayani Esfahani, Lina Altomare, Elena Canciani, Claudia Dellavia, Elena Varoni, Barbara Caterina Azzimonti, *Generation of a bioengineered 3d bone-mucosal oral model from human derived primary cells*, Congresso Società Italiana di Biomateriali - 13-15 Luglio 2016 Ischia, Italy

2016 Arash GhalayaniEsfahani, Pooja Bellatti, Elisa Brivio, Lina Altomare, Alberto Cigada, Luigi De Nardo, *Electrophoretic Deposition of Chitosan/Clobetasol Propionate Composite Micro-Pattern Scaffolds: Fabrication Process and Material Properties*, 229th ECS meeting, San Diego, California, USA

2016 Elena Varoni, Arash Ghalayani Esfahani, Lina Altomare, Lia Rimondini, Giovanni Lodi, Luigi De Nardo, *Micro-patterned patches for Clobetasol topical drug delivery*, Congresso Società Italiana di Biomateriali - 13-15 Luglio 2016 Ischia, Italy

2013 Arash Ghalayani Esfahani, Mohammad Ghorbani, *Electrophoretic deposition of Ni/SiO_2 nanocomposite coating: fabrication process and tribological and corrosion properties*, 9th International Conference on Diffusion in Solids and Liquids, June 24-28, Madrid, Spain

TEACHING EXPERIENCE

2020 **Graduate Teaching Assistant**, Biomaterials, Politecnico di Milano (Polimi)

2019 **Graduate Teaching Assistant**, Biomaterials, Politecnico di Milano (Polimi)

2018 **Graduate Teaching Assistant**, Biomaterials, Politecnico di Milano (Polimi)

2017 **Graduate Teaching Assistant**, Biomaterials, Politecnico di Milano (Polimi)

2016 **Co-Supervisor, Master Thesis, Soleimanzade Mehdi**, *Electrophoretic deposition of Bioglass/Chitosan Composites for bone tissue engineering applications*, Politecnico di Milano (Polimi)

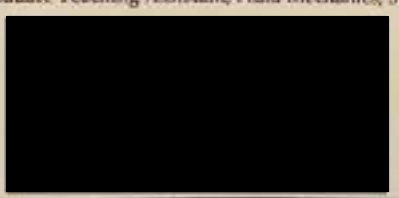
2016 **Graduate Teaching Assistant**, Materials Selection Criteria in Design and Engineering, Politecnico di Milano (Polimi)

2016 **Graduate Teaching Assistant**, Biomaterials, Politecnico di Milano (Polimi)

2015 **Graduate Teaching Assistant**, Materials Selection Criteria in Design and Engineering, Politecnico di Milano (Polimi)

2012 **Graduate Teaching Assistant**, Heat Transfer, SUT

2012 **Graduate Teaching Assistant**, Fluid Mechanics, SUT



2012	**Graduate Teaching Assistant**, Thermodynamics, SUT
2011	**Graduate Teaching Assistant**, Thermodynamics, SUT
2011	**Graduate Teaching Assistant**, Heat Transfer, SUT

Research and Course Projects

2022	Coupling Electrospinning technique with Electrophoretic deposition to fabricate air filtration system
2021	Comparing 3D printed hydrogel structures with analogous electrophoretic deposition microchannel products: Fabrication Process and material characterizations
2020	Micro-Structured Patches for Dermal Regeneration Obtained via Electrophoretic Replica Deposition
2019	Electrophoretic bottom up design of chitosan patches for topical drug delivery
2018	Bactericidal activity of gallium-doped chitosan coatings against staphylococcal infection
2018	Hierarchical microchannel architecture in chitosan/bioactive glass scaffolds via electrophoretic deposition positive-replica
2016	Hierarchic micro-patterned porous scaffolds via electrochemical replica-deposition enhance neo-vascularization
2015	Electrophoretic Deposition of Ni/SiO2 Nanocomposite Coating: Fabrication Process and Tribological and Corrosion Properties
2015	Simulation of a protein molecule using Coarse-Grained molecular dynamics, Simulation of Molecular Systems for Chemistry, Materials, and Biology, Polimi
2011	DUCATI: a revolution in machine design, Advanced Technical English, SUT
2007	Tele-ski compartments design, Design of Machine Elements II, Shiraz University
2006	Design and manufacturing of a heat pipe, Heat Transfer, Shiraz University
2006	Design a water distribution system for a village in Iran using EPANET software, Water Transfer Systems, Shiraz University
2005	Numerical analysis of impulse vibrations, Mechanical Vibrations, Shiraz University

Relevant Coursework

2014-present	**Materials Engineering:** (Focused on Biomaterials)	Cell culturing and general cell- and molecular biology techniques, Electrophoretic deposition method (Expert), Electrospinning technique, 3D printing process Characterization of Materials: NMR, FT-IR, RAMAN, DSC, DTA, TG, AFM, STM, SEM, EDS, XRD, GDOES, Optical Microscopy, Laser Profilometry Molecular Spectroscopy: Infrared, Raman, and UV-visible Simulation of Molecular Systems for Chemistry, Materials, and Biology
2010-12		Advanced Methods in Characterization of Materials, Advanced Principles of Chemistry in Materials Engineering, Nano Materials I & II, Nano Thermodynamics, Principles of Thin Layers, Nano Systems Modeling and Simulation
2002-2008	**Fluid Mechanics:**	Fluid Mechanics I, II, & Lab, Computational Fluid Dynamics Using Fluent, Thermodynamics I, II, & Lab, Heat Transfer, Turbo-machinery, Heat Exchanger Design, Internal Combustion Engines, Water Transfer Systems, Environmental Engineering
	Mathematics:	Mathematics I & II, Engineering Mathematics, Differential Equations, Numerical Analysis
	Solid Mechanics:	Statics, Dynamics, Strength of Materials I, II, & Lab, Material Science & Lab, Machine Dynamics & Lab, Design of Machine Elements I & II, Heavy Machinery Design, Mechanical Vibrations & Lab, Automatic Control

Computer/Equipment Expertise

Engineering Applications:	*FLOW-3D*, Gaussian 03, Fluent, MATLAB, AutoCAD, EPANET, Adams, Tecplot
Lab Instrument:	Spectrophotometry, Dynamic Mechanical Analyzer (DMA), 3D Laser Microscopy, Electrochemical testing with Autolab Potentiostats/Galvanostats, Scanning Electron Microscopy (SEM), ultraviolet-visible spectrophotometery, Atomic Force Microscopy (AFM), Fourier Transform Infrared Spectroscopy (FTIR), Thermogravimetric analysis (TGA), Ultrasonic Spray Coating,
General Applications:	MS Office™, LaTeX, Photoshop, HTML Editors, OriginPro
Programming Languages:	FORTRAN, Pascal
Operating Systems:	Windows, MAC, Linux

Honors and Recognitions

2021-Present	Postdoctoral Fellow
2014 - 2018	PhD scholarship, Politecnico di Milano
2013	Best student paper (J. Nano Research 26 (2014), 45-51), Sharif University of Technology Research Week, SUT
2010-12	Ranked 2nd among class of 2010 in Nanotechnology, SUT
1998-02	Ranked 1st among class of 1998 throughout high school, Ehsan High School
2001	Selected and honored in the National Computer Olympiad, Ehsan High School

Languages

English	Fluent (English is the official language for the Ph.D. program at Politecnico di Milano.)
Italian	Basic
Farsi	Native

References

Roberto Chiesa (roberto.chiesa@polimi.it), Professor, Chemistry, Materials and Chemical Engineering, Polimi, Milan, Italy
Marino Lavorgna (marino.lavorgna@cnr.it), Institute of Polymers, Composite and Biomaterials of National Research Council, Italy
Alfredo Ronca (alfredo.ronca@cnr.it) , Institute of Polymers, Composite and Biomaterials of National Research Council, Italy

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