Seyed H. Mussavi Rizi

Education

Politecnico di Torino, Torino, Italy — 11/2019–09/2023
PhD candidate, Materials Science and Technology

Coursework
- Materials for advanced applications in photonics and sensors
- Engineering applications of photonics
- Advanced glasses and glass-based components
- Introduction to TEM analysis
- Advanced wear of materials
- From science to business
- Project management, Entrepreneurial Finance

Dissertation "Bioresorbable phosphate glass optical fibers for biomedical applications," supervised by Professor Davide L. Janner and Professor Nadia G. Boetti.

Scholarship Fondazione Links scholarship on "bioresorbable multifunctional fiber devices" for three years.

Shahrood University of Technology, Shahrood, Iran — 09/2016
M.Sc., Materials Science and Engineering, rank 1

Coursework
- Advanced glasses
- Advanced crystal growth and ceramic forming
- Semiconductor properties and production
- Advanced analytical and identification methods
- Advanced materials properties
- Oxide and non-oxide engineering ceramics
- Ceramics pre-sintering processes
- Ceramic dyes and ceramic glues

Thesis "Mechanical properties of zirconia-alumina composite thin films reinforced with carbon nanotubes prepared by tape casting method," supervised by Professor Mojtaba Ghatee.

Azad University, Shiraz, Iran — 02/2013
B.Sc., Materials Science and Engineering, top 5%

Thesis "Effects of temperature and electric current in electrodeposition on particle size and morphology of nanosilver powders," supervised by Professor Reza Derakhshandeh-Haghighi.

Coursework
- Powder metallurgy, Metal forming
- Physical and mechanical properties of materials
- Heat treatment, surface metallurgy and coatings
- Fundamentals of electrical engineering

Publications and Conferences	Mussavi Rizi, S. H.*, N. G. Boetti, D. Pugliese, D. L. Janner, Optimizing Extrusion and Fabrication of Phosphate Glass-Based Microstructured Optical Fibers for Biomedical Applications, 34th Canadian Materials Science Conference. June 2023.	2023
	J. T. Pandayil, S.H. Mussavi Rizi, S. Russo, N.G. Boetti, D. Pugliese, D. Janner, "Towards a novel bi-functional bioresorbable micro-structured optical fiber for theranostic applications," Proc. SPIE 12627, Translational Biophotonics: Diagnostics and Therapeutics III, 126271N (11 August 2023); https://doi.org/10.1117/12.2670867	2023
	S.H. Mussavi Rizi, N.G. Boetti*, D. Pugliese, J.T. Pandayil, D. Janner Bioresorbable phosphate glass microstructured optical fibers with hole and core for biomedicine. (Paper 12573-39), SPIE Optics + Optoelectronics 2023.	2023
	Mussavi Rizi, S. H., N. G. Boetti, D. Pugliese, D. L. Janner. Phosphate glass-based microstructured optical fibers with hole and core for biomedical applications, *Optical Materials*, 131.	2022
	Kherad, R., S. Dodangei, S. H. Mussavi Rizi, M. Ghatee. Characterization of anode supported micro-tubular solid oxide fuel cells prepared by successive non-aqueous electrophoretic deposition, *Journal of Electroceramics*, 48, 1–7.	2021
	Mussavi Rizi, S. H., M. Ghatee. A study of mechanical properties of alumina–zirconia composite films prepared by a combination of tape casting and solution impregnation method, *Journal of Australian Ceramics Society*, 56, 167–174.	2020
	Mussavi Rizi S. H., M. Ghatee. Rheological and mechanical properties of tape-casted zirconia-toughened alumina composite thick films reinforced with multiwalled carbon nanotubes. *Journal of Composite Materials*, 54(17): 2353–2363.	2020
	Mussavi Rizi S. H., M. Ghatee. Mechanical properties of zirconia-alumina composite thin films reinforced with carbon nanotubes prepared by tape casting method: M.Sc. thesis abstract. Journal of the Iranian Ceramics Society, 51.	2018
Research interests	— Energy: fundamental and practical research on energy conversion and storage — Rheology: Rheological and colloidal behavior of polymers; ceramic slurries and paste — Exploring innovative recycling methods for composite materials, with an emphasis on sustainable practices and environmental protection — Advancements in material sciences for sustainable engineering, focusing on the repurposing of composite materials for new applications — Processing and characterization of glass preforms, optical fibers, and photonic systems — Optical fibers in lasers, sensing technologies, multi-clad fibers and photonic crystals — Glass and ceramic fabrication and characterization — Additive manufacturing: ceramics, glass and polymers	
Experience	**Working Project:** 3D Printing of bioresorbable phosphate glass-polymer composites with FDM technique.	2023–Present
	Research Assistant, Politecnico di Torino, Italy	2019–2023

Bioglass extrusion, fabrication of microstructured optical fibers, and phosphate-based bioresorbable glasses. Feasibility research on and designs for bioglass 3D printing.

Research Assistant, Shahrood University of Technology, Iran 2016–2018
Fabrication of ceramic matrix composites (ZTA, CNT, LSM) and their rheological and mechanical properties.
Lab maintenance and reports.
Instruments and equipment operator for internal and external samples.

Teaching Assistant, Shahrood University of Technology, Iran 2013–2014
Led sections for the General Chemistry course; reviewing the course material; going over problem sets; correcting homework, and grading exams.

Intern, Qaem Metal Casting, Iran 2012–2013
Design processes to minimize scrap and subsequent machining.

Certificates, colloquia

MDPI 2022
— Optical biosensors
— Synthesis and sintering of high-entropy ceramics
— Photodynamic therapy

Properties and functions of medical and dental cement, Faculty of Chemical Engineering and Materials Colloquium Series, Shahrood University of Technology. 2014

ANOVA for design and analysis of experiments in ceramics, Faculty of Chemical Engineering and Materials Colloquium Series, Shahrood University of Technology. 2014

Workshop on X-ray diffraction for advanced identification and analysis of materials, Faculty of Mining, Petroleum and Geophysics Engineering, Shahrood University of Technology, Shahrood, Iran. 2013

Skills

Technical

— Keen knowledge and hands-on experience in glass fabrication, extrusion, and fiber drawing
— Familiarity with refractive index measurements, attenuation and loss measurements, optical glass fiber cleaving, and splicing
— Proficient in laboratory operating procedures and equipment: operating furnaces, particle size, and zeta potential analyzers, nanoindentation, microhardness, and rheometer instruments
— Extensive experience in colloidal, wet, and dry ceramic processing and fabrication methods such as tape casting and screen printing
— Familiarity with Thermal analysis (TGA/DTA), Scanning electron microscopy (SEM), X-ray diffraction (XRD), Electrochemical impedance spectroscopy (EIS)

Computation: OriginLab, ImageJ, X'pert, Fusion360, Matlab.

	Coding: Basic Python. **Productivity:** MS Office, Latex.
Memberships	— Glasses, ceramics and composites (GLANCE) research group, Politecnico di Torino — The American Ceramic Society — ASM International — The Minerals, Metals and Materials Society (TMS) — Association for Iron and Steel Technology (AIST)
Personal	Native speaker's ability in Persian, advanced English, and beginner Italian