

**PERSONAL INFORMATION** Matteo Zanocco

📍 University of Udine, DPIA – Polytechnic Department of Engineering and Architecture, Via del Cotonificio 108, 33100 Udine, Italy

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✉ [matteo.zanocco@uniud.it](mailto:matteo.zanocco@uniud.it)

**PROFESSIONAL EXPERIENCE**

<p>01/02/2023 – 31/01/2026 (DURATION: 3 years)</p>	<p>Fixed time researcher, letter a (RTD-a). Project iNEST-interconnected Northeast Innovation Ecosystem. University of Udine - SSD ING-IND/22 (Materials Science and Technology).</p> <p>University of Udine, Udine (Italy)</p> <p>Projects:</p> <ul style="list-style-type: none"> <li>ANALYSIS OF HYBRID OR TRADITIONAL MATERIALS FOR HYDROGEN STORAGE</li> <li>NEW MATERIALS (METAL, POLYMER AND CERAMIC) FOR ADDITIVE MANUFACTURING</li> </ul> <p>Scientific supervisor at the University of Udine: Prof. Lorenzo Fedrizzi</p>
<p>01/12/2021 – 31/01/2023 (DURATION: 1 year and 2 months)</p>	<p>Post-doc researcher Project title: Study and development of surface treatments applied to metallic materials for use in the biomedical field. University of Udine - SSD ING-IND/22 (Materials Science and Technology).</p> <p>University of Udine, Udine (Italy)</p> <p>Study and development of innovative technologies and advanced materials for use in the field of biomaterials.</p> <p>Research activities include:</p> <ul style="list-style-type: none"> <li>Characterization of materials and coatings using ATR-FTIR, Raman and SEMEDXS techniques;</li> <li>Monitoring of material degradation in contact with biological solutions designed to simulate the biological environment by electrochemical tests (polarization curves and electrochemical impedance tests);</li> <li>Analysis of hydrogen development and evaluation of material weight loss due to corrosive processes of magnesium alloys.</li> </ul> <p>Scientific supervisor at the University of Udine: Prof. Lorenzo Fedrizzi</p>

<p>01/10/2017 – 31/03/2021 (DURATION: 3 years and 6 months)</p>	<p>Winner of the "Monbukagakusho" scholarship issued by the Government of Japan at the Kyoto Institute of Technology (Total amount 6216000 JPY) to conduct PhD.</p> <p>京都工芸繊維大学 - Kyoto Institute of Technology, Matsugasaki Hashikamicho, Sakyo Ward, Kyoto, 606-8585, Japan</p> <p>Study of the biocompatibility of metallic, polymeric, and ceramic materials and coatings applied to them for use in biomedical applications:</p> <p>The main research activities involved:</p> <p>Studying the surface chemistry of silicon nitride and developing surface treatments to modulate the amount of non-stoichiometric nitrogen on its surface;</p> <ul style="list-style-type: none"> <li>• Testing the biocompatibility of each treatment by culturing cell cultures (mainly osteosarcoma and mesenchymal cells) and bacteria</li> <li>• Characterization of pre- and post-treatment surface material by various analytical techniques (ATR-FTIR spectroscopy, Raman spectroscopy, X-ray Photoelectron Spectroscopy, SEM and EDXS, Cathodoluminescence).</li> </ul> <p>Development of polymer-ceramic composites for improving the biocompatibility of polymeric materials for biomedical use;</p> <ul style="list-style-type: none"> <li>• Production of samples with different silicon nitride content;</li> <li>• Verification of the biocompatibility of the composite material by culturing cell cultures (mainly osteosarcoma and mesenchymal cells) and bacteria;</li> <li>• Characterization of the material through various analytical techniques (ATR-FTIR spectroscopy, Raman spectroscopy, X-ray Photoelectron Spectroscopy, SEM and EDXS, Cathodoluminescence).</li> </ul> <p>Surface functionalization by laser-patterning of ceramic substrates and study of increase in bone mineralization;</p> <ul style="list-style-type: none"> <li>• Production of specimens with a composite surface, ceramic matrix with Bioglass based fillers;</li> <li>• Verification of the biocompatibility of the composite material by culturing cell cultures (mainly osteosarcoma and mesenchymal cells) and bacteria;</li> <li>• Characterization of the material through various analytical techniques (ATR-FTIR spectroscopy, Raman spectroscopy, X-ray Photoelectron Spectroscopy, SEM and EDXS, Cathodoluminescence).</li> </ul> <p>Development of ceramic coating, using silicon nitride as a starting material, on different substrates (metallic, ceramic and polymeric) to enhance cellular response and decrease bacterial proliferation;</p> <ul style="list-style-type: none"> <li>• Production of samples by laser deposition technique of different substrates with an amorphous silicon-based coating;</li> <li>• Testing the biocompatibility of materials by culturing cell cultures (mainly osteosarcoma and mesenchymal cells) and bacteria;</li> <li>• Characterization of materials through various analytical techniques (ATR-FTIR spectroscopy, Raman spectroscopy, X-ray Photoelectron Spectroscopy, SEM and EDXS, Cathodoluminescence).</li> </ul>
<p>04/2018 – 04/2021 (DURATION: 3 years)</p>	<p>Part-Time job at ShinSei Co.</p> <p>ShinSei Co, Joyo, Nishirokutan , Kyoto, 610-0101, Japan</p> <p>Collaboration to produce material for PhD and analysis on behalf of the company at Kyoto Institute of Technology;</p> <ul style="list-style-type: none"> <li>• Production of ceramic coatings on various substrates using a laser machine provided by the company;</li> <li>• Characterization of materials through different analytical techniques (ATR-FTIR spectroscopy, Raman spectroscopy, X-ray Photoelectron Spectroscopy, SEM and EDXS, Cathodoluminescence) for the development of different projects by the company.</li> </ul>

04/2018 – 04/2021 (DURATION 3 years)	Research worker Kyoto prefectural university of medicine, Department of immunology
	Kyoto prefectural university of medicine, Kajichō, Kamigyo Ward, Kyoto, 602-8566, Japan
	Collaboration for in vitro tests and biological tests to verify biocompatibility of samples; <ul style="list-style-type: none"><li>• Cultivation of bacteria for antibacterial tests and mesenchymal cells for cell proliferation tests with related bone tissue production;</li><li>• Characterization of materials with various techniques (fluorescence microscope, UV-Vis) for cellular and new bone matrix visualization.</li></ul>

**EDUCATION****Doctor of Engineering "Material Chemistry" PhD**

Level 8 QEQ

京都工芸繊維大学 - Kyoto Institute of Technology, Matsugasaki Hashikamicho, Sakyo Ward, Kyoto, 606-8585, Japan

PhD supervisors: Prof. GPezzotti, Prof. W.Zhu, Prof. E.Marin

The main skills acquired during the Ph.D. program were:

- Metal, ceramic and polymeric biomaterials for biomedical applications;
- Surface functionalization and biocompatibility of materials;
- Degradation phenomena at the interface between prosthetic components (wear behavior, fretting, third body wear);
- Raman spectroscopy;
- FTIR spectroscopy;
- X-ray diffraction (XRD);
- Scanning electron microscopy (SEM);
- Optical and laser microscopy;
- Technical scientific English for article writing.

Research title: "Role of surface texture and off-stoichiometry on the structural, biogenic, and antibacterial properties of inorganic biomaterials"

- Analysis of the behavior of different materials with different surface treatments to increase or decrease biological response;
- Research and development of various ceramic coating formulations, applied to different substrates, to increase the biocompatibility of the substrate-coating pair;
- Analysis of coating biocompatibility on different substrates.

**Master's Degree "Science and Technology of Bio and Nanomaterials"**

Level 7 QEQ

"Ca' Foscari" University, Venice (Italy)

Supervisors: Prof. GPezzotti, Prof. P.Riello

The main skills acquired during the Master's degree course were:

- Materials design;
- In-depth study of Biomaterials and Prosthetics;
- Definition and use of physical/mathematical models suitable for analyzing the characteristics and performance of materials and products, equipment, plants and production processes;
- Spectroscopic methods of analysis;

Thesis title (conducted at Kyoto Institute of Technology, Kyoto): "Raman spectroscopic analysis of zirconia toughened alumina ceramic (ZTA) in the presence of different metal stains and ZTA retrieval femoral heads"

- Study of in vitro degradation by Raman spectroscopy of ceramic materials used in the biomedical field;
- In vitro simulation of cases of metal contamination of ceramic substrate;
- Analysis of explanted ceramic implants with similar metal contamination and comparison with the results obtained from in vitro simulations.

**Bachelor's Degree "Materials Science and Technology"**

Level 6 QEQ

"Ca' Foscari" University, Venice (Italy)

Supervisor: Prof. E.Cattaruzza

The main skills acquired during the graduate course were:

- Application of basic principles of chemistry and physics to understand structure and properties of various classes of materials;
- Selection and combination of different materials according to their intended application;
- Understanding and management of production technologies of artifacts made from the different types of materials;

Thesis title: "Doped borosilicate glasses with transition elements."

- Color modification and optical properties of borosilicate glasses through the insertion of transition elements;

- Analysis of the optical properties of different samples obtained with different formulations.

### Industrial master technician diploma: electrical engineering and automation

Level 4 QEQ

State industrial technical institute "A. Pacinotti", Venice (Italy)

## PERSONAL SKILLS

Mother tongue Italian

Other languages

	COMPREHENSION		SPEAKING		WRITING PRODUCTION
	Listening	Reading	Interaction	Oral production	
English	C1	C1	C1	C1	C1

Levels: A1/A2: Basic user - B1/B2: Intermediate user - C1/C2: Advanced user

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Security	Problem solving
Advance user	Advance user	Advance user	Advance user	Advance user

Levels: Basic User - Intermediate User - Advanced User

- Excellent knowledge of word processing software (Microsoft Word and language for Latex programming), spreadsheet (Microsoft Excel and Origin) and presentations (Microsoft Power Point);

**Bibliometric indexes (Scopus source)**

<p><b>h-index</b></p>	<p><b>11</b></p>																						
<p><b>Documents</b></p>	<p><b>34 total documents</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Materials Science 29  Engineering 18  Physics and Astronomy 12  Chemical Engineering 11  Chemistry 7  Biochemistry, Genetics and Molecular Biology 4  Computer Science 4  Pharmacology, Toxicology and Pharmaceutics 2  Dentistry 1  Immunology and Microbiology 1  Medicine 1  Multidisciplinary 1</p> </div> <div style="width: 50%;"> <p>5 Documents by subject area</p> <table border="1"> <caption>Documents by subject area</caption> <thead> <tr> <th>Subject Area</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Materials Science</td> <td>11</td> <td>31.9%</td> </tr> <tr> <td>Engineering</td> <td>6</td> <td>19.8%</td> </tr> <tr> <td>Physics and Astronomy</td> <td>5</td> <td>13.2%</td> </tr> <tr> <td>Chemical Engineering</td> <td>4</td> <td>12.1%</td> </tr> <tr> <td>Chemistry</td> <td>3</td> <td>7.7%</td> </tr> <tr> <td>Other</td> <td>5</td> <td>14.6%</td> </tr> </tbody> </table> </div> </div>		Subject Area	Count	Percentage	Materials Science	11	31.9%	Engineering	6	19.8%	Physics and Astronomy	5	13.2%	Chemical Engineering	4	12.1%	Chemistry	3	7.7%	Other	5	14.6%
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<p><b>Citations</b></p>	<p><b>293 total citations on 216 papers</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>2023: 40 citations  2022: 95 citations  2021: 81 citations  2020: 38 citations  2019: 16 citations  2018: 10 citations  2017: 13 citations</p> </div> <div style="width: 50%;"> <table border="1"> <caption>Citations by Year</caption> <thead> <tr> <th>Year</th> <th>Citations</th> </tr> </thead> <tbody> <tr> <td>2017</td> <td>13</td> </tr> <tr> <td>2018</td> <td>10</td> </tr> <tr> <td>2019</td> <td>16</td> </tr> <tr> <td>2020</td> <td>38</td> </tr> <tr> <td>2021</td> <td>81</td> </tr> <tr> <td>2022</td> <td>95</td> </tr> <tr> <td>2023</td> <td>40</td> </tr> </tbody> </table> </div> </div>		Year	Citations	2017	13	2018	10	2019	16	2020	38	2021	81	2022	95	2023	40					
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**Conference proceedings**

<b>1.</b>	<i>Marin E., Rondinella A., Boschetto F., <b>Zanocco M.</b>, McEntire B., Sonny Bal B., Pezzotti G.</i> Understanding Silicon Nitride's Biological Properties: From Inert to Bioactive Ceramic Proceedings, BIOCERAMICS30 Nagoya, Japan, 26-29 October 2018
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**Participations in international and national conferences as speaker or co-author**

<b>1.</b>	<b>M. Zanocco</b> , F. Andreatta, S. Virgilio, P. Machetta, A. Silvonen, A. Lanzutti, L. Fedrizzi <i>Effect of microstructure on the electrochemical behaviour of 42CrMo4 QT steel</i> EUROCORR2023 Brussels, Belgium, 27-31 August 2023
<b>2.</b>	<b>M. Zanocco</b> , F. Andreatta, S. Virgilio, P. Machetta, A. Silvonen, A. Lanzutti, L. Fedrizzi <i>Effect of microstructure on the electrochemical behaviour of 42CrMo4 QT steel</i> Giornate nazionali corrosione e protezione Torino, Italy, 5-7 July 2023
<b>3.</b>	G. Capurso, <b>M. Zanocco</b> , L. Dorbolò, R. Offoiach, A. Rondinella, F. Andreatta, G. Buffa, D. Campanella, L. Fedrizzi Comportamento a corrosione di giunti saldati per applicazione nel settore navale AIM2022 Padova, Italy, 21-23 September 2022
<b>4.</b>	<i>Marin E., Rondinella A., Boschetto F., <b>Zanocco M.</b>, McEntire B., Sonny Bal B., Pezzotti G.</i> Understanding Silicon Nitride's Biological Properties: From Inert to Bioactive Ceramic BIOCERAMICS30 Nagoya, Japan, 26-29 October 2018

**Professional memberships**

Member of the Associazione Italiana di Metallurgia (AIM)

**Reviewer for international journals**

Coatings, Materials

*I hereby consent to the processing of the data I provided in this CV. I declare my agreement with the data protection regulations in the data privacy statement.*

Udine il 31.05.2023,

il sottoscritto