



MICHELE BIANCHI, PhD

Assistant Professor (RTDb) in Chemistry (CHIM/03)

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EDUCATION and TRAINING

- Bachelor's Degree in Materials Chemistry, "Alma Mater Studiorum" Università di Bologna, Nov 24, 2005.
- Master's Degree in Photochemistry and Materials Chemistry, "Alma Mater Studiorum" Università di Bologna, Oct 25, 2007.
- PhD in Chemical Sciences, "Alma Mater Studiorum" Università di Bologna, Apr 19, 2011. Title of the dissertation: "Multiscale fabrication of functional materials for life sciences". Supervisors: Prof. Fabio Biscarini, Dr. Francesco Valle. Main research topics: nanotechnologies applied to regenerative medicine; unconventional fabrication techniques; cell guidance on micro/nano-patterned materials; atomic force microscopy.
- Research Fellow, Rizzoli Orthopedic Institute (Bologna, Italy), Apr 2011 - Sep 2015. Main research topics: plasma deposition of antibacterial and biomimetic thin films for bone regeneration; nanostructured ceramic films for low-wear bone implants; nanomechanical characterization of coatings and biomaterials; magnetic scaffolds for regenerative medicine; surface analysis techniques.
- Fixed-term Researcher, Rizzoli Orthopedic Institute (Bologna, Italy), Oct 2015 – Jul 2018. Main research topics: design and fabrication of novel antibacterial and biomimetic nanostructured coatings; design of inorganic/organic 3D scaffolds for bone tissue engineering; multiscale evaluation of surface and mechanical properties of thin films and biomaterials for bone regeneration.
- Fixed-term Researcher, Fondazione Istituto Italiano di Tecnologia (Ferrara, Italy), Jul 2018 – Aug 2022. Main research topics: design and development of organic electronic devices and microelectrodes based on nanostructured and multifunctional materials for high performance devices; design and development through unconventional patterning techniques of nanostructured biointerfaces for controlled growth and differentiation of neural and stem cells.
- Assistant Professor (RTDb, CHIM-03) Università degli Studi di Modena e Reggio Emilia (Modena, Italy), Sep 2022 to date. Main research interests: design and characterization of micro- and nanostructured biointerfaces based on conductive polymers for biomedical and bioelectronic applications. Evaluation of cancer cell migration under confined conditions and mechanical stimuli.

RESEARCH EXPERIENCE ABROAD

- 11/2012-04/2013, Radboud University Medical Centre - Nijmegen (Netherlands)

BIBLIOMETRIC INDEXES

H-index: 21 (SCOPUS)/23 (G. Scholar)

Total citations: 1065 (SCOPUS)/ 1304 (G. Scholar)

Total number of publications on peer-reviewed journals: 66

TEN RELEVANT PUBLICATIONS IN BIOMATERIALS/BIOELECTRONICS

- “Flexible neural interfaces based on 3D PEDOT:PSS micropillar arrays”. Lunghi A, Mariano A, Bianchi M, Dinger NB, Murgia M, Rondanina E, Toma A, Greco P, Di Lauro M, Santoro F, Fadiga L, Biscarini F. ADV MATER INTERFACES 2022, 20.
- “PEDOT-based Neural Interfaces for Recording and Stimulation: Fundamental Aspects and in Vivo Applications”. Bianchi M, De Salvo A, Asplund M, Carli S, Di Lauro M, Schulze-Bonhage A, Stieglitz T, Fadiga L, Biscarini F. ADV SCIENCE 2022, 10.1002/advs.202104701.
- “Scaling of Capacitance of PEDOT:PSS: Volume vs Area”. Bianchi M, Carli S, Di Lauro M, Prato M, Murgia M, Fadiga L, Biscarini F. J. MATER. CHEM. C 2020 , 8, 11252-11262.
- Nanodecoration of electrospun polymeric fibers with nanostructured silver coatings by ionized jet deposition for antibacterial tissues”. Pagnotta G, Graziani G, Baldini N, Maso A, Focarete ML, Berni M, Biscarini F, Bianchi M, Gualandi C. MATER SCI ENG C 2020, 113:110998.
- Electrodeposited PEDOT: Nafion composite for neural recording and stimulation” Carli S, Bianchi M, Zucchini E, Di Lauro M, Prato M, Murgia M, Fadiga L, Biscarini F. ADV HEALTH MATER 2019, 8:1900765.
- “Nanostructured Ag thin films deposited by pulsed electron ablation”. Gambardella A, Berni M, Graziani G, Kovtun A, Liscio A, Russo A, Visani A, Bianchi M. APP SURF SCI 2019, 475: 917-925.
- “Fabrication and characterization of biomimetic hydroxyapatite thin films for bone implants by direct ablation of a biogenic source”. Graziani G, Berni M, Gambardella A, De Carolis M, Maltarello MC, Boi M, Carnevale G, Bianchi M. COATINGS, 8: 269
- Substrate geometry directs the in vitro mineralization of calcium phosphate ceramics”. Bianchi M, Urquia Edreira ER, Woolke JGC, Birgani ZT, Habibovic P., Tampieri A, Jansen, JA , Marcacci M, Leeuwenburgh S, van den Beucken JJJP. ACTA BIOMATER 2014, 10(2):661-9.
- "Pulsed plasma deposition of zirconia thin films on UHMWPE: proof of concept of a novel approach for joint prosthetic implants". Bianchi M, Russo A, Lopomo N, Boi M, Maltarello MC, Sprio S, Baracchi M, Marcacci M. J MATER CHEM B 2013, 1(3): 310-318.
- “Stable Non-Covalent Large Area Patterning of Inert Teflon-AF Surface: A New Approach to Multiscale Cell Guidance”. Valle F, Chelli B, Bianchi M, Greco P, Bystrenova E, Tonazzini I, Biscarini F. ADV ENG MATER 2010, 12: B185-B191.

MONOGRAPHS

- "Multiscale Fabrication Of Functional Materials For Regenerative Medicine" (1st Edition). Author: Michele Bianchi. Springer Editor 2011. ISBN-13: 978-3-642-22880-3, ISBN: 3-642-22880-1.
- “Pulsed Plasma Deposition (PPD) Technique “ in the “DEKKER ENCYCLOPEDIA OF NANOSCIENCE AND NANOTECHNOLOGY” (3rd Edition). Authors: Michele Bianchi, Alessandro Russo, Carlo Taliani, Maurilio Marcacci. CRC Press 2015. DOI: 10.1081/E-ENN3-120053233
- “Magnetic scaffolds for bone tissue engineering” in “ BIOMIMETIC APPROACHES FOR TISSUE HEALING”. Authors: Michele Bianchi, Silvia Cauci, Maurilio Marcacci, Alessandro Russo. OMICS Group International 2015.

CONFERENCES

The research work has been presented at more than 60 between international and national conferences, including Materials Research Society (MRS Fall 2022), Micro and Nano Engineering Conference (MNE2021 and MNE2022), European Society of Biomaterials (ESB 2017 – oral & poster), European Ceramic Society (ECerS 2017 - oral), European Orthopedic Research Society (EORS 2017, 2016, 2013 - oral), European Society of Biomechanics (ESB Sevilla 2017 – oral & poster, 2013 poster), Italian Society of Biomaterials (SIB 2017, 2015, 2014 - oral) and the International Society For Technology In Arthroplasty (ISTA 2015-2012 - oral).

PRIZES

- Springer Thesis Prize 2011 recognizing Outstanding Ph.D. research across the physical sciences for the thesis “Multiscale fabrication of functional materials for life sciences” (Supervisor: Prof. Fabio Biscarini): Publication of the PhD thesis in the “Springer Theses” series.
- Best poster - Biomaterials and Novel Technologies for Healthcare, 2nd International Biennial Conference BioMaH – Frascati (Roma), 8-11 Ottobre 2018
- Best poster - 3rd NANODAY, Parma, Italy, 12-14 Jul 2017
- Best poster - National Nanomedicine Conference, Genova, Italy, 28-29 Nov 2008

OTHER HONOURS

- Invited Speaker at ORBITALY 2022, Erice (Italy). “Multiscale patterning of conductive polymers: applications in neurotechnology”.
- Invited Speaker at all’ “International Conference on Nanosciences & Nanotechnologies (NN19), Salonicco (Greece) “Organic Neurotechnologies: Materials and Devices”.
- Invited Speaker at EMN Meeting - Biomaterials 2017, Milan (Italy) “Pulsed Electron Deposition of functional biomaterials for orthopedic applications”.
- Invited Speaker at the 2nd PARMA NANODAY 2015, Parma (Italy) “Nano-Biomaterials in the Orthopedic Field”.
- Guest Associate Editor of the Research Topic “Next-generation Electroactive Biomaterials for Tissue Engineering: Design and Applications”, in “Frontiers in Bioengineering and Biotechnology (ISSN 2296-4185) since Feb 2023.
- Guest Associate Editor of the Research Topic “Multiscale Patterning of Conducting Polymers for Advanced Organic (Bio)Electronic Devices”, in “Frontiers of Materials” (ISSN 2296-8016) since Aug 2022.
- Guest Editor dello Special Issue “Nanostructured Materials for Biomedicine and Bioengineering” in “Nanomaterials” (ISSN 2079-4991) since 2020
- Member of the Organizing Committee of 1st Workshop on Neuromorphic Organic Devices 2019, Ferrara (Italy)
- Member of the Editorial Board (Review Editor) of “Frontiers in Materials” (ISSN 2296-8016) since May 2022.
- Member of the Editorial Board (Review Editor) of “Frontiers in Bioengineering and Biotechnology” (ISSN 2296-8016) since May 2022.
- Cover Picture of Adv Mater Interfaces 25/2022 (DOI: 10.1002/admi.202270139)
- Back Cover of Adv. Biosystems 4/2017 (DOI: 10.1002/adbi.201770017)
- Inside Front Cover of Adv. Eng. Mater. 6/2010 (DOI: 10.1002/adem.201090015)
- Member of the Editorial Board of GSL Journal of Forensic Research (since May 2017)
- Chairman of the “Biomaterials and Nanotechnology” section at the ICMMB XIX (International Conference on Mechanics in Medicine and Biology). Bologna, Italy 3-5 Sep 2014.

- Reviewer for Science Advances, Materials Today Bio, Acta Biomaterialia, Advanced Healthcare Materials, Advance Materials, Journal of Materials Chemistry B, Materials Today, Scientific Reports, Frontiers in Bioengineering, Journal of Colloid and Interface Science, Journal of Material Science: Materials in Medicine, RSC Advances, Journal of Nanomaterials, International Journal of Molecular Sciences, Biomedical Materials, Process Biochemistry.

ROLE IN FUNDED PROJECTS

- “Piezo-driven theramesh: A revolutionary multifaceted actuator to repair the injured spinal cord (PIEZO4SPINE)”. Role: Key personnel. Grant: 3.537.120 euro. Grant provider: EIC Pathfinder OPEN 2022. Years: Gen 2023 - Dec 2026
- “Nanostructured osteochondral scaffold: novel biomimetic triggers for enhanced bone regeneration (NANO-SCORES)”. Role: Key personnel. Grant: 1.016.301 euro. Grant provider: EuroNanoMed III Joint Transnational Call for Proposals 2017. Years: Apr 2018 - Mar 2020
- “Novel nanostructured antibacterial films for applications in the biomedical field (NanoCoatings)”. Role: Key personnel; Responsible for the scientific activity and for project drafting. Grant: 990.100,00 euro. Grant provider: Regione Emilia Romagna and European Commission (Bando POR-FESR 2014-2020). Years: Apr 2016 - Mar 2018.
- “Nanobiosensors on functionalized polymer matrix: smart devices for in-line monitoring of extracorporeal treatments, assisted breathing and oxygen therapy (NanoSens4Life)” Role: Responsible for the scientific activity and for project drafting. Grant: 999.673,25 euro. Grant provider: Regione Emilia Romagna and European Commission (Bando POR-FESR 2014-2020). Years: Apr 2016 - Mar 2018.
- “Innovative coatings of prosthetic materials with antibacterial phytochemicals”. Role: Key personnel; Grant: 50.000 euro. Grant Provider: Rizzoli Orthopedic Institute 5x1000 2015. Years: Jan 2018- Dec 2018.
- “Nanostructured Coatings Enhancing Material Performances in Joint Arthroplasty”. Role: Key personnel; co-responsible for the scientific activity and project drafting. Grant: 371.200 euro. Grant Provider: Italian Minister of Health (Giovane Ricercatore 2010). Years: Dec 2012 - Jun 2016.
- “PEEK bone implants covered with nanostructured biomimetic hydroxyapatite for osteoporotic patients”. Role: Co-responsible for the scientific activity and project drafting. Grant: 20.000 euro. Grant Provider: Fondazione del Monte di Bologna e Ravenna. Years: Gen 2014 – Dec 2014

TECHNOLOGY TRANSFER

Patents

- “DISPOSITIVO PER LA TRASDUZIONE DI SEGNALI ELETTRICI”. Inventori: L Fadiga, M Di Lauro, F Biscarini, M Bianchi. Application number: 102021000007277. Date filing: 25/03/2021
- “METODO PER LA PRODUZIONE DI IMPIANTI ORTOPEDICI ANTI-USURA” (“Fabrication method for low-wear orthopedic implants”). Inventors: Michele Bianchi, Nicolo Lopomo, Maurilio Marcacci, Alessandro Russo. Patent number (Italy): MI2012A001539 Publication Date: 17 Mar 2014.
- “METHOD FOR THE CREATION OF COMPLEX STRUCTURES ON A MICROMETRIC OR NANOMETRIC SCALE, AND THE COMPLEX STRUCTURE THUS OBTAINED”. Inventors: Michele Bianchi, Massimiliano Cavallini, Fabio Biscarini, Francesco Valle. Patent Number for the EU: EP 2466377 A1 .Publication date: 20/6/2012. Patent Number for the USA: US 2012/0171431 A1. Publication date: 05/07/2012.

Start-up

Co-founder of “Organic Bioelectronics srl.” (from 01/01/2020 on)

ACADEMIC ACTIVITY

- Holder of the teaching of "General and Inorganic Chemistry" (SSD CHIM/03, CFU 6) at the Department of Life Sciences, University of Modena and Reggio Emilia (Master's Degree Course in FOOD AND AGRICULTURAL SCIENCE AND TECHNOLOGY) since a.a. 2022/2023.
- Holder of the teaching of "Biomaterials for the Biomedical Industry" (SSD CHIM/03, CFU 6), at the Department of Life Sciences, University of Modena and Reggio Emilia (Master's Degree Course in INDUSTRIAL BIOTECHNOLOGY) since a.a. 2022/2023.
- Holder of a teaching contract for the teaching of "Biomaterials for the Biomedical Industry" (SSD CHIM/03, CFU 6), at the Department of Life Sciences, University of Modena and Reggio Emilia (Master's Degree Course in INDUSTRIAL BIOTECHNOLOGY) in the year 2021/2022.
- Holder of a teaching contract for the teaching of "Biomaterials for the Biomedical Industry" (SSD CHIM/03, CFU 6), at the Department of Life Sciences, University of Modena and Reggio Emilia (Master's Degree Course in INDUSTRIAL BIOTECHNOLOGY) in the year 2020/2021.
- Tutor of several PhD students and undergraduate students.

LAST UPDATE: 17/03/2023

A handwritten signature in blue ink, appearing to read "Michele Fanci", is located below the text "LAST UPDATE: 17/03/2023".