Giorgio Cortelli

RESEARCHER

CONTACTS

Date of Birth: 16/09/1995

Nationality: Italian

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SKILLS

Advanced Atomic Force Microscope (**AFM**) techniques for imaging, mechanical and electrical characterization.

Microfabrication of planar and threedimensional stretchable and flexible systems for soft bioelectronic interfaces development.

Computational mechanics simulations based on the Finite Element Method.

Digital Skills: Matlab, Rhino, AutoCAD, ABAQUS (FEM), Microsoft Word/Excel/PowerPoint.

LANGUAGES

Italian - Mother tongue

English - Advanced

EDUCATION AND TRAINING

Research Fellow at DICAM Department

01/02/2023 - present Alma Mater Studiorum - University of Bologna, Italy

Title of the project: "Computational and experimental investigation about the insertion of stretchable and flexible 3D microelectrode arrays".

PhD Civil, Chemical, Environmental and Materials Engineering

03/11/2019 – present Alma Mater Studiorum - University of Bologna, Italy

Study on the development of novel experimental techniques and interpretative models for nanomechanical characterization of planar and threedimensional stretchable and flexible conductors with Atomic Force Microscope.

PhD Period Abroad at Neuroelectronic group, Technische Universität München (TUM) - Department of Electrical and Computer Engineering

31/08/2021 – 30/01/2022 München, Germany

Microfabrication of threedimensional microelectrode arrays (**3D MEAs**) for *in vitro* and *in vivo* application.

Admitted to the PhD thesis defense (scheduled for June 2023).

MSC Materials Physics and Nanoscience

09/2017 – 24/10/2019 Alma Mater Studiorum - University of Bologna, Italy

Final grade: 110/110

BSC Physics

2013 - 2017 Alma Mater Studiorum - University of Bologna, Italy

Final grade: 110/110 cum laude

Highschool Diploma

2009 - 2014 Liceo Scientifico Statale Enrico Fermi, Bologna, Italy

Final grade: 100/100

WORK EXPERIENCE

Intern - Elettra Sincrotrone Trieste

27/01/2019 – 19/06/2019 Trieste, Italy

During my internship at Fermi-Elettra, I had the chance to support preparing the experimental setup, performing the experiment, and conducting the data analysis for my MSC dissertation.

HONOURS AND AWARDS

Park System AFM Scholarship

15/06/2021

Awarded with the first prize for the outstanding AFM research project on: "Atomic Force Microscopy Nanomechanics of hard thin films on soft substrates: insights for stretchable conductors"

Marco Polo Scholarship

27/05/2021

University of Bologna Incentives to mobility for research abroad. Research project: "Fabrication, Characterization and Numerical Simulation of 3D Printed Microelectrode Arrays"

PUBLICATIONS

Peer-reviewed publications

Atomic Force Microscopy Nanomechanics of Hard Nanometer-Thick Films on Soft Substrates: Insights into Stretchable Conductors. Cortelli, G., Patruno, L., Cramer, T., Murgia, M., Fraboni, B., and de Miranda, S. (2021) ACS Applied Nano Materials, 4(8), 8376–8382. https://doi.org/10.1021/acsanm.1c01590

In Situ Force Microscopy to Investigate Fracture in Stretchable Electronics: Insights on Local Surface Mechanics and Conductivity, Cortelli, G., Patruno, L., Cramer, T., Fraboni, B., and de Miranda, S., ACS Applied Electronic Materials 2022 4 (6), 2831-2838, DOI: 10.1021/acsaelm.2c00328

Determination of Stiffness and the Elastic Modulus of 3D-Printed Micropillars with Atomic Force Microscopy-Force Spectroscopy, Cortelli, G., Grob, L., Patruno, L., Cramer, T., Mayer, D., Fraboni, B., Wolfrum, B., de Miranda S., ACS Material and Interfaces 2023, https://doi.org/10.1021/acsami.2c21921

Conference

NanoScentific Forum Europe 2020

Talk: "Indentation of metallic thin film on soft substrate: insights for stretchable conductors."

E-MRS Spring Meeting 2021

Talk: "Atomic Force Microscopy Nanomechanics of hard thin films on soft substrates: insights for stretchable conductors"

SOFT SKILLS

My PhD was carried out in collaboration with two research groups from two different Departments of the University of Bologna: DICAM and DIFA. In this context, I was the only point of contact between the two research groups. Therefore, I developed good organizational and managerial skills, decision-making autonomy, the spirit of adaptation, and teamwork.

I acquired good communication skills during the presentations of the results of my research activities at international conferences.

I have developed good interpersonal skills and a teamwork attitude also thanks to my ten years of experience as a competitive basketball player, and during my time volunteering as an AGESCI Scout leader of boys and girls aged between 12 and 16 years.

I, the undersigned Giorgio Cortelli, born in Bologna on September 9, 1995, declare that everything reported in this curriculum corresponds to the truth. I also authorize the processing of personal data contained in my curriculum vitae based on Art. 13 del D.Lgs. 196/2003.