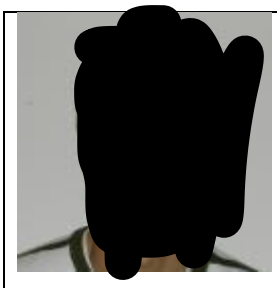

Gabriele Neretti was born in [redacted] He received the bachelor's degree in Electrical Engineering in 2002 from the University of Bologna, Italy, with mark 110/110 and praise, and the master's degree in Electrical Engineering in 2005 from the same University, with mark 110/110 and praise. He received the Ph.D. degree in Electrical Engineering from the University of Bologna in 2009. In December 2011 he became an Assistant Professor in the Electrical Electronic and Information Engineering Department, University of Bologna. Since September 2020, he is an Associate Professor in the same Department.

During his PhD he worked for a 6-month period in the Mechanical and Aerospace Department in the Princeton University, New Jersey, USA, studying the EHD Interaction in subsonic flows.

Starting from 2011, he is lecturer of yearly courses of Electric Circuits and Plasma Engineering in the University of Bologna, Italy, and Tongji University, Shanghai, China.

He is a member of the International Society of Plasma Medicine and editorial board member of the 'Open Physics Journal' and 'Electronics MDPI Journal'. He published more than 55 international paper contributions, and a book chapter in 2016 with title 'Active flow control by using plasma actuators' featured by more than 2000 download.

His research interests principally include technological applications of non-thermal plasmas in aerospace and aeronautical domains, in the plasma medicine field and in the design of high voltage power supplies.

- In the aerospace topic, he experimentally investigates the Magneto Hydro Dynamic (MHD) interaction in hypersonic flows. The main purpose of this research is to deflect the shockwave in front of reentry vehicles, in order to decrease thermal fluxes investing the fuselage. On a parallel plane the control of the shock wave could allow to control the trajectory of the vehicle itself. Main activities are related with the study of the magnetic configurations used to create the MHD interaction, and in the development of the diagnostics utilized to characterize the discharge and to evaluate plasma effects, such as spectroscopy, fast imaging and Schlieren imaging. These activities have been caried out with important Aerospace Centers as CIRA (Italian Aerospace Research Center), ASI (Italian Space Agency) and ESA (European Space Agency).
- In the aeronautic domain, the research activity is mainly focused on the Electro Hydro Dynamic (EHD) interaction in subsonic flows. The ionic wind produced by Dielectric Barrier Discharge (DBD) plasma actuators are utilized to modify the flow around aerodynamic surfaces, to increase lift, decrease noise and avoid stall. Main activities are related with the plasma diagnostics and fluid-dynamics effects such as electrical measurements and Pitot profile acquisitions. Partnerships with the Aeronautics and Aerospace Department of the University of Bologna and important Italian aeronautics companies have been carried out.
- In the plasma medicine filed, sterilization properties of non-thermal plasmas have been investigated. The main purpose is to treat different surfaces in order to kill bacteria, viruses, yeasts or parasites. Most important results have been performed with indirect treatments operated by plasma actuators, sterilizing surfaces, water and fruit juices. Particular attention has been payed to the role of free charged particles in the sterilization process. This activity led to a patent application in 2018 with the title 'Plasma sterilization method', patent internationally protected. In the same research area, he is involved in plasma surface treatments of biopolymers, to increase wettability, biodegradation and cell proliferation.
- Gabriele Neretti is also involved in the design and realization of high voltage power supplies for plasma generation. In particular he built a multilevel power supply characterized by 24 levels of 600 V each, able to produce arbitrary voltage waveforms up to ±15 kV, 20kHz. This particular topology of high voltage source avoids matching impedance issues with the load, allowing to maximize plasma effects. A second typology of power supply is a sinusoidal high voltage generator with on-board high voltage diagnostics, able to control the average power delivered to the discharge, allowing to more reliable and safe plasma treatments.