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TECNOLOGIE  
AEROSPAZIALI

## All you need is drops: when liquid interfaces become smart

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### Abstract

The control of liquid behavior at the interface with solid surfaces represents a great scientific and technological challenge, with the potential of high-impact in a variety of engineering applications. Non-wetting self-cleaning surfaces are one of the most famous examples: inspired by the well-known Lotus leaves, non-wetting surfaces possess the ability to minimize the adhesion of water, promote dirt particles removal, and can be effective as anti-icing surfaces for aeronautical applications. During the lecture, Dr. Antonini will present his research activities focused on understanding the interaction mechanism between liquid and solid surfaces, working at the interface between fluid mechanics, thermodynamics, material science and surface micro- and nano-engineering. Starting from the beauty and sometimes unexpected behavior of liquid drops, investigated through fundamental experiments up to wind tunnel tests, it is possible to improve our understanding of complex multiphase interfacial phenomena, setting the ground for the design and engineering of new smart interfaces.



### Short Bio

Dr. Carlo Antonini received the BSc in Aerospace Engineering (2004) and the MSc in Aeronautical Engineering (2007), from Politecnico di Milano, Italy, and the PhD in Technologies for Energy and Environment from University of Bergamo (2011), Italy, with a thesis titled "Superhydrophobicity as a strategy against icing". In 2012, Dr. Antonini received support from the European Research Council (ERC) to join ETH Zurich, Switzerland, as a Marie Curie Fellow; he worked in the Laboratory of Thermodynamics in Emerging Technologies on the project "ICE2: ICEphobicity for severe ICing Environments". Since March 2015, Dr. Antonini joined EMPA – Swiss Federal Laboratory for Material Science and Technology - as scientist, focusing on the control of surface wetting properties of cellulose-based materials for various engineering applications, ranging from liquid separation (oil remediation) to thermal insulation. In 2017 he started the consulting company "Antonini R&D and Innovation Consulting", to support innovation in SMEs.

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