

Livia Angeloni - CV

After obtaining a B.Sc. in Clinical Engineering and an M.Sc. cum laude in Nanotechnology Engineering (Bio-nanotechnology track) at Sapienza University of Rome (Italy), Livia Angeloni performed her Ph.D. in joint international supervision between the Laboratory of Biomaterials and Bioengineering (LBB, Laval University, Canada) and the laboratory of Electron Microscopies and Nanoscopies (EMiNa, Sapienza University, Italy). During her Ph.D., she laid the foundations for a deep theoretical and practical knowledge of atomic force microscopy (AFM) techniques. The most relevant scientific achievements of her Ph.D. came from her work on the quantitative magnetic characterization of bionanomaterials. She developed a novel AFM-based technique to remove electrostatic artifacts from magnetic force microscopy (MFM) measurements and used this technique to quantify the magnetic properties of single nanoparticles.

Livia Angeloni got hooked on cell mechanics at the end of her Ph.D. (2017). She started developing AFM techniques for cell characterization and successfully applied for a postdoc on cell biomechanics at TU Delft (2018). In Delft, she investigated the effects of surface topographies on the mechanical properties, viability, and fate of bone cells and bacteria. She developed AFM and Fluidic Force Microscopy (FluidFM) techniques to analyze single cells' mechanics, adhesion, and morphology. In 2019, she obtained the MCSA (Cofund) LEaDing Fellowship, allowing her to continue her collaborative research at TU Delft, working on her independent project. She developed a methodology to prepare samples for structural cell biology analysis using FluidFM and designed and fabricated novel polymeric hollow cantilevers to extract subcellular structures.

Driven by her interest in macrophage mechanics, in 2022, Livia joined the Department of Biomedical Engineering at TU Eindhoven. Here, she is developing her research line on the mechanics of immune cells and setting up mechanobiology facilities that allow for the correlative use of atomic force microscopy (AFM) and optical techniques. For those activities, she was recently awarded the ICMS fellowship.