



**ZAJEDNIČKI SEMINAR Hrvatskog biofizičkog društva i
Zavoda za istraživanje mora i okoliša**

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**Exploring biological systems at the nanoscale to
inspire rational design of advanced materials**

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<http://mv.nanoscopy.eu>

Biomimicry is the attitude to investigate the Nature to emulate or take inspiration from, in order to design efficient and reliable technology. Modern advanced microscopy and spectroscopy instruments allows to characterize biological systems at the nanoscale, extending the biomimetic approach to molecules and their function. In particular, the atomic force microscope (AFM) has proven to be a valuable tool to exploit such a paradigm. Two different stories will be presented, in which the information learned using AFM can be useful in the rational design of advanced materials: 1. bioactivation of 3D scaffolds based on extra-cellular matrix proteins and 2. design of anti-fouling surfaces inspired by the eyes of green crab *Carcinus Maenas*.

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Massimo Vassalli graduated in Physics at the University of Florence in 1999 and obtained a PhD in non-linear dynamics and complex systems at the Engineering faculty of the University of Florence in 2004. Since 2005 he is with the National Research Council (CNR) of Italy and since 2008 he is independent researcher at the Institute of Biophysics in Genova. His main research interests regard the application of advanced optical and scanning probe microscopy and spectroscopy techniques to the study of biological microsystems. In particular, he is stressing the application of atomic force microscopy for the nanoscale characterization of morphological and mechanical properties of molecular assemblies and micrometer-sized biological systems (bacteria, cells, unicellular organisms).