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VITALITY

Progetto VITALITY | Programma di Consulenza Specialistica | **Seminario**

Defects activity in metal halide perovskites

Abstract

Metal halide perovskites (chemical formula ABX3, A = formamidinium (FA+), methylammonium (MA^+), or Cs^+ , B = $Pb2^+$, Sn^{2+}, X = I^-, Br^-, or Cl^-) have demonstrated their potential as a material platform for a new generation of optoelectronic technology. One superior feature of metal halide perovskites is their continuously tunable bandgap from near infrared to ultraviolet by designing the chemical composition of the semiconductor crystalline unit. This enables them to provide top absorbers with matched bandgaps for tandem solar cells.

Here I will assess the most recent advances in elucidating the (photo)chemistry of defects related to the chemical composition of the perovskite crystalline unit. I will show how they define the charge carrier dynamics in the semiconductor and how they affect the figures of merit and stability of perovskites based solar cells.

martedì 10 giugno 2025 - Ore 11.45

Aula G

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Annamaria Petrozza leads the “Advanced Materials for Optoelectronics” research group and she is the Director of the Center for Nano Science and Technology of the Italian Institute of Technology. She received her PhD in Physics in 2009 from the University of Cambridge (UK) with a thesis on the study of optoelectronic processes at organic and hybrid semiconductors interfaces under the supervision of Prof Sir R.H. Friend. From 2008 to 2010 she worked as a staff scientist at the Sharp Laboratories of Europe, Ltd (Oxford, UK) on the development of new market competitive solar cell technologies. She got the “Innovators Under 35 Italy 2014” award by the MIT Technology Review for her pioneering work on perovskites. She has been selected among the “Emerging Investigators 2017” by the Royal Society of Chemistry. In 2022 she was awarded “The Innovation in Materials Characterization Award” by the Materials Research Society which honors an outstanding advance in materials characterization. Since 2023 she has been a Fellow of the Royal Society of Chemistry. She serves as associate editor at "ACS Energy Letters" (American Chemical Society).