

# AVVISO DI SEMINARIO

Il giorno 18/05/2026 alle ore 14.30

nell'aula Gismondi

Il Dr. Diego Di Girolamo

terrà un seminario dal titolo

## **Halide Perovskites for solar energy conversion**

Proponente: Prof. Marilena Carbone

### **Abstract**

Halide perovskites are a class of hybrid organic–inorganic semiconductors that have rapidly transformed photovoltaics R&D over the past 15 years, thanks to their outstanding optoelectronic properties and low-cost fabrication potential. Their rise has led to remarkable improvements in solar cell efficiencies, positioning them as strong candidates for next-generation photovoltaic technologies.

In this seminar, I will briefly review the key factors behind this success and then focus on the main challenges still hindering large-scale commercialization. In particular, I will discuss stability issues and their impact on long-term device performance, as well as the problem of lead toxicity in high-efficiency perovskite compositions, examining current strategies for lead replacement and the associated trade-offs. These aspects will be addressed through recent research efforts, highlighting ongoing work aimed at improving device stability and developing more sustainable materials.

### **Brief CV**

Dr. Diego Di Girolamo obtained his PhD in Chemistry from the University of Rome “La Sapienza” in 2019, with a thesis on perovskite solar cells—a research topic he has pursued for nearly a decade. During this time, he also worked at Helmholtz-Zentrum Berlin, the University of Naples Federico II, and the University of Rome Tor Vergata.

His research has focused on the synthesis and characterization of thin films for solar cell applications, as well as on the investigation of degradation mechanisms. For the past four years, he has been working in industrial R&D at 3SUN, a company of the ENEL Group, where he is involved in the development of silicon/perovskite tandem solar cells.

Throughout his career, he has published over 40 scientific articles and filed three patent applications, receiving more than 4,000 citations and achieving an h-index of 27.