



**UPO** UNIVERSITÀ DEL PIEMONTE ORIENTALE  
DIPARTIMENTO DI SCIENZE E INNOVAZIONE TECNOLOGICA

## EVENTI DiSIT

Seminario | Seminar

19-06-2023

10:00-13:00

Aula 204

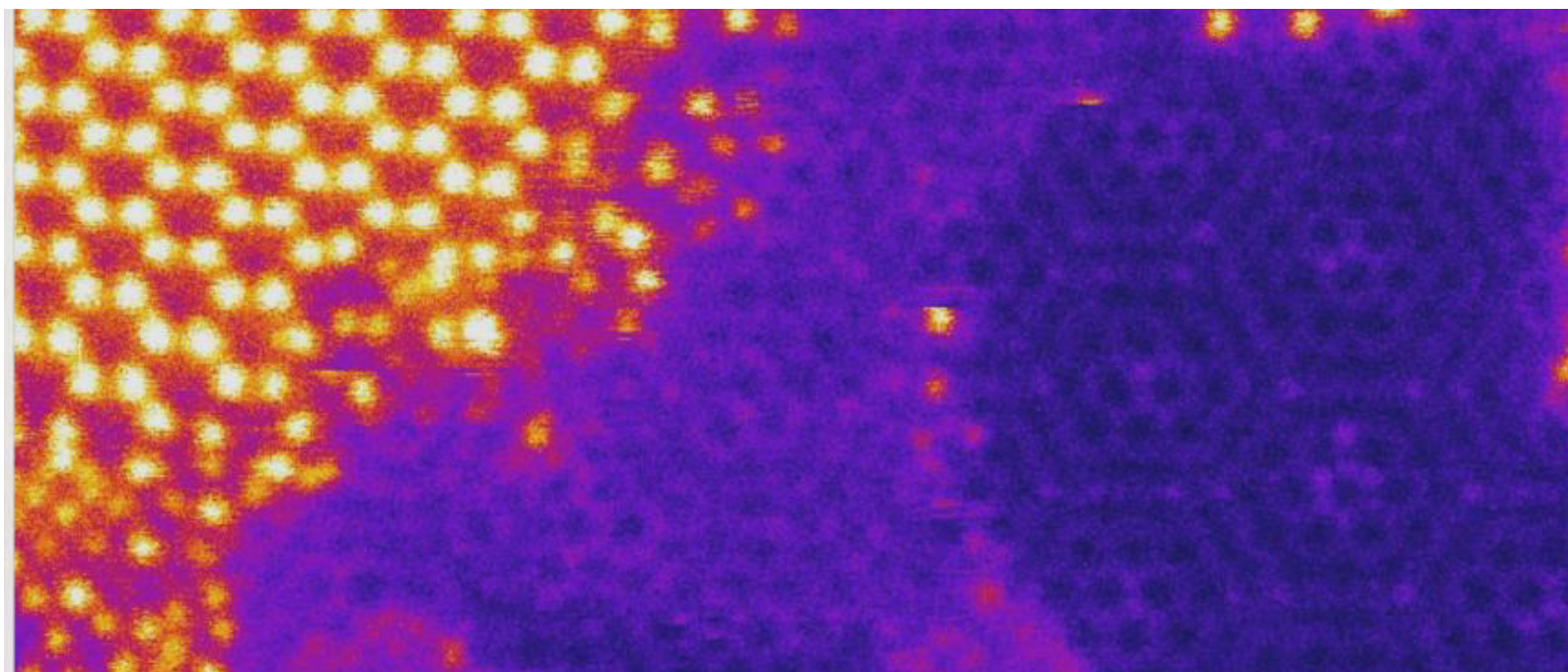
# Winding Road to Graphene

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Graphene, as the first isolated two-dimensional (2D) structure, has a privileged position among 2D materials for its peculiar properties. We will present overview of its discovery, surprising properties which open the gate to a new technological platform for electronics, energy solutions, sensorics, surface coatings and others. The chemical inertness and simplicity of its atomic structure also makes graphene a most suitable substrate for stabilizing less obvious 2D structures.

We will mention methods of graphene syntheses with particular advantages and disadvantages. Then a newly developed method where the 2D materials are grown by wet-chemical process directly within the space between two graphene oxide (GO) layers, while reducing the oxide groups in the same reaction step will be explained. Besides copper iodide, 2D-CuI, a material that normally only occurs in layered form at elevated temperatures between 645 and 675 K [1], a number of 2D structure like AgI, NiI<sub>2</sub>, BiI<sub>3</sub>, FeI<sub>2</sub>, CoI<sub>2</sub> MnI<sub>2</sub> and EuOI have also been demonstrated. These synthesized structures are predicted to differ by their optical, magnetic and electrical properties relevant for novel quantum technologies. Here, electron transmission microscopy (TEM) images of the atomic structure of these 2D metal iodides complemented by electron energy loss spectroscopy (EELS) and X-ray absorption spectroscopy (XAS) analyses as well as additional characterization methods will be presented. Currently, the electronic transport in devices made of the 2D metal iodide structures are under investigation.

[1] Adv. Mater. 2022, 2106922; DOI: 10.1002/adma.202106922

EVENTO APERTO A:

Docenti | Teachers, Borsisti | Research Fellows, Assegnisti | Postdoctoral researcher, Dottorandi | PhD students, Studenti | Students

SEMINARIO IN LINGUA: Inglese

