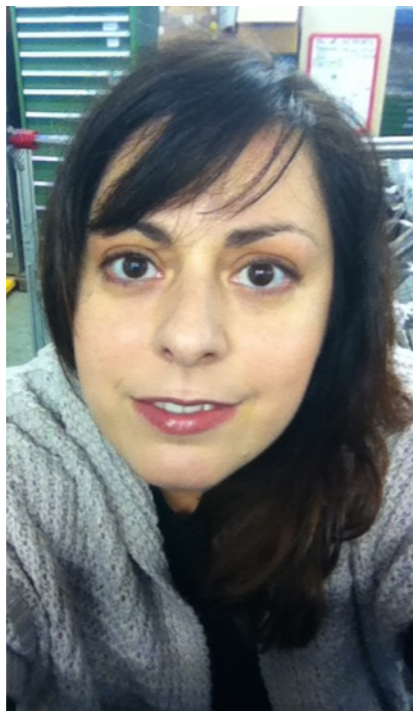


Graphene-based Field Effect Transistors as Radiation Sensors

Alessandra Di Gaspare

INFN-Laboratori Nazionali di Frascati

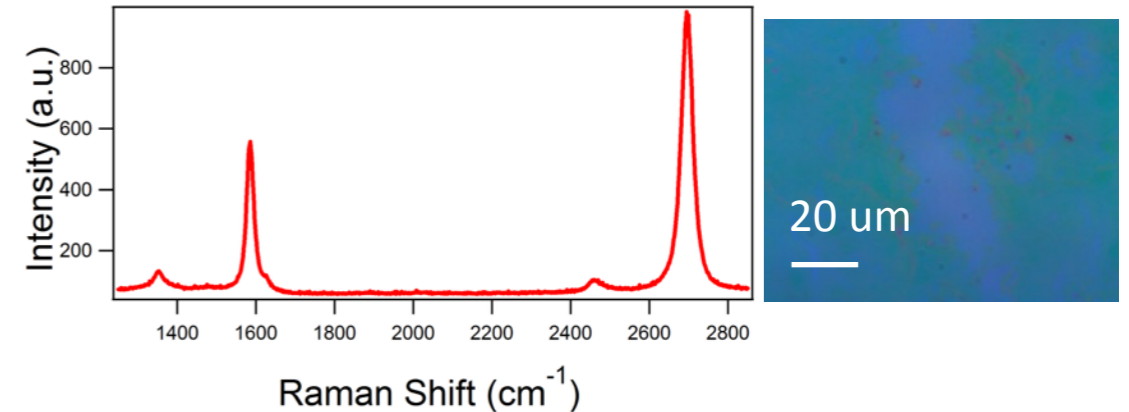
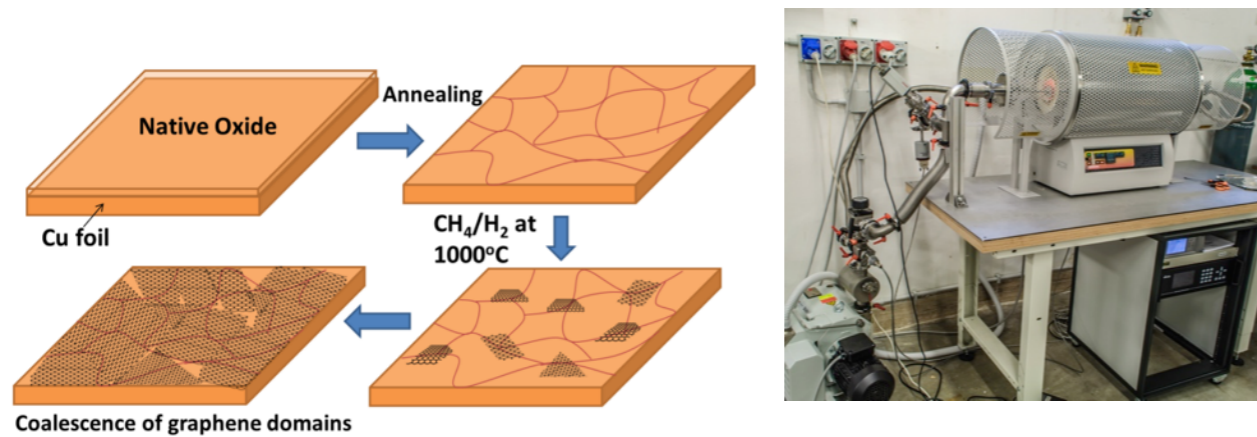


Key concept: Graphene-based devices for novel schemes of radiation detection

Synthesis and Characterization of Graphene

- Synthesis of Graphene: Chemical Vapor Deposition (CVD) on Copper substrates: the most promising and readily accessible method to obtain high-quality graphene on large area

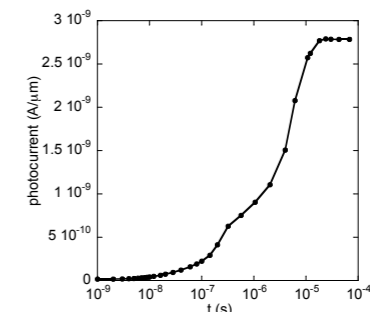
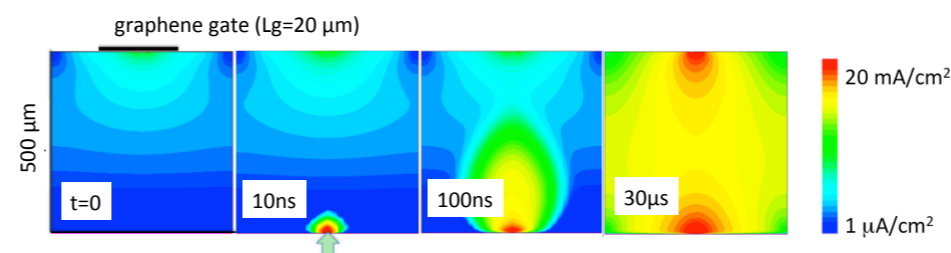
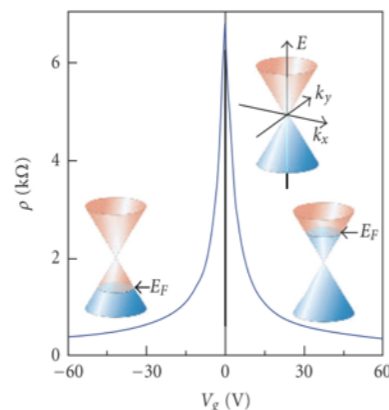
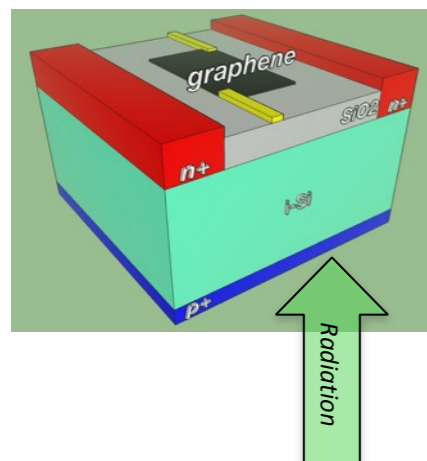
Graphene-CVD facility @ Laboratori Nazionali di Frascati



We obtained good-quality single layer Graphene after transfer on SiO_2/Si substrate, as revealed by Raman Spectra and optical images

Graphene-Field Effect Transistors Detectors (Gr-FET)

The key property in Gr-FET for radiation detection is the transient change in channel conductivity at the Dirac Point



In the proposed approach, radiation detection is not through direct absorption of radiation, but rather by sensing the electric field distribution changes upon irradiation in the adjacent medium