Graphene is a material that has attracted a lot of scientific attention over the past few years as it seems to be compatible with a lot of applications. It can be obtained by various techniques and each technique will provide a graphene with properties better suited for one application rather than another. Regarding the microelectronics field, graphene is an interesting material as it shows ballistic transport and very high mobility; however, it is not yet compatible with CMOS-like applications as it lacks a band gap.

**Context**

The objectives of the project are to:
- Optimize graphene fabrication
- Test the functionalization as a tool to tune the graphene band gap

**SiC graphene growth**

- **Optimized protocol: surface preparation + idem + H2 annealing**

- **Study of different growth parameters:**
  - With or without annealing and under Ar or vacuum

**Suspended mechanically exfoliated graphene**

- **Suspension graphene should not show interactions with the substrate.** Such a type of structure would prevent various parasitic phenomena occurring upon deposition of graphene flakes on SiO2 (strain, local doping...)

**Graphene Functionalization**

- **Other studies in progress**
  - **Theoretical calculations**
    - Graphene model: bilayer or monolayer?
  - **Device fabrication**
    - On exfoliated graphene, with e-beam lithography and thermal evaporation.

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