



UNIVERSITÀ DEGLI STUDI DI MILANO

SEMINARI CHIMICI

Data

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Aula G13, Nuovo Settore Didattico

Oratore

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Titolo

**Graphene on transition metal substrates -
intercalation and chemical functionalization**

Coordinatore

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Graphene, a single layer of graphite, exhibits exceptional properties: it is chemically inert and impermeable to most gasses, displays excellent mechanical stability and flexibility, is optically transparent, and has very high thermal and electrical conductivity. The very high electrical conductivity of graphene is associated with unique properties of the charge carriers in graphene. These behave as relativistic Dirac particles and exhibit extremely high mobility associated with ballistic transport properties, *i.e.* transport without collisions, on length scales of several hundred nanometers even at room temperature. These unique electronic properties make graphene a potential candidate as a future material for electronic components and electrodes. However, to realize this potential, methods for controlling graphene's electronic properties, *e.g.* for opening a band gap, are needed. One route to achieve this is by chemical functionalization. On the other hand, the chemical inertness and impermeability of graphene has lead to the suggestion that graphene could be used as an efficient coating layer on metal substrates. In this talk I will discuss intercalation and chemical functionalization of graphene, as well as the significance of the observed mechanisms for realizing graphene's potential as coating and electronic device material.