

# Bilayer Graphene Grown by Chemical Vapour Deposition (CVD) using Oxidative De-Hydrogenation Chemistry

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Application of graphene is foreseen in composites, energy production and storage devices, touch screens and electronics. This conviction is the result of theoretical predictions of graphene properties, and relies on the outstanding performances of small sized prototypes fabricated with graphene exfoliated from graphite. Most predictions are yet to be verified experimentally while specifications of large-scale devices remain uncertified. To meet these objectives, extended films of high-quality graphene need to be produced reliably. CVD is the most suitable process yielding graphene from hydrocarbons over transition metal substrates. The most efficient synthesis proceeds from methane at elevated temperature and is not compatible with most applications. The use of oxidative dehydrogenation (ODH) is very promising for graphene growth by CVD as such chemistry has allowed the growth down to 300°C of carbon nanotubes with low defect density. We will report on the optimization of the reaction process shedding light onto graphene growth mechanism by ODH chemistry. The study of transport and optical properties of the resulting graphene will be presented as well.