Graphene films synthesized via CVD
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Graphene seems to be the new wonder material and as such could be potentially applied in many different fields. Depending on the application the graphene format can vary from powderflake to homogeneous film form. The powder form could meet large volume/weight requirements and can be obtained from graphite. While the large area graphene films can be obtained using chemical vapor deposition (CVD) methods on a metal catalyst such as copper [1]. The synthesis of the graphene film is only the first step since it has to be typically transferred onto insulating or similar substrates for subsequent characterization or device fabrication. The importance of this transfer process is usually underestimated and if not done with care it can end up damaging the graphene and in turn its performance.

The synthesis of graphene films via CVD will be described. After a successful transfer of monolayer and bilayer graphene films onto the required substrates; the characterization via Raman, high resolution and scanning mode TEM will be presented. Suspended graphene samples were required in order to determine the grain diffraction pattern [2], the number of graphene layers and the orientation/stacking between the different layers [3,4] using TEM. Even if the preparation of suspended graphene samples is not straightforward the amount of information that can be extracted from this characterization technique is extremely valuable.

References