# INTERCALATION OF EPITAXIAL GRAPHENE ON SiC(0001) BY ANTIMONY

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Sublimation growth of graphene on SiC(0001) in argon atmosphere presents a well-established method for the preparation of graphene up to wafer scale [1]. This method leads to an interfacial graphene-like layer – the buffer layer (BL) – which is covalently attached to the substrate. Consequently, it lacks the electronic properties typical of graphene. The BL, however, can be detached from the SiC by intercalation, resulting in quasi-freestanding graphene. In addition, the electronic properties of graphene can be tuned by intercalation as well.

We use x-ray photoelectron spectroscopy and angle-resolved photoelectron spectroscopy to investigate intercalation of antimony, which has been predicted by theory [2]. Sb is deposited on the BL by molecular beam epitaxy. Whereas subsequent annealing in ultra-high vacuum results in re-evaporation of Sb without intercalation, Sb remains on the sample upon annealing in argon at atmospheric pressure at comparable temperatures (Fig. 1). Successful intercalation of Sb is evidenced by core-level spectroscopy, demonstrating the conversion of BL to graphene (Fig. 2).

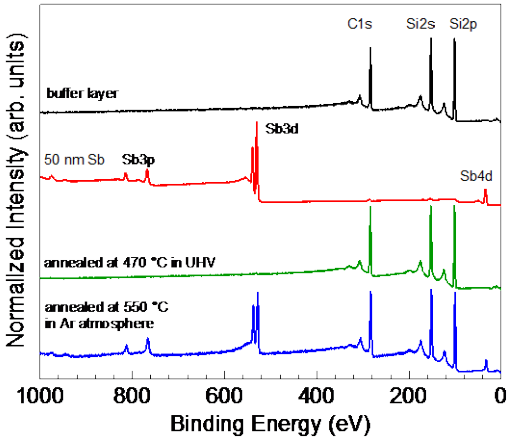


Fig. 1. Survey spectra of pristine BL, BL after deposition of 50 nm Sb, and after annealing in UHV and Ar.

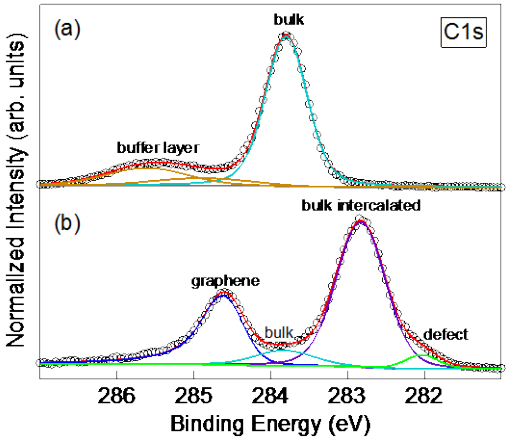


Fig. 2. C1s spectra of BL (a) before and (b) after intercalation of Sb.

*Keywords:* Graphene; Intercalation; Silicon carbide; Photoelectron spectroscopy

**References**

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