

EVALUATION OF SUPPORT LAYERS FOR GRAPHENE TRANSFER

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Graphene is a two-dimensional carbon material known for its excellent electrical conductivity. Graphene grown by chemical vapor deposition (CVD) is typically synthesized on copper substrates and requires a transfer step for integration onto target surfaces. Due to the atomic thickness and mechanical fragility of monolayer graphene, a temporary support layer is essential during the transfer process.

In this study, different support layers were evaluated for the transfer of CVD-grown graphene from copper foil onto target surfaces, such as gold (Au) and silicon (Si). The investigated support materials included paraffin, polymethyl methacrylate (PMMA), polycarbonate (PC), and six different photopolymer resins. The support layers were applied with varying thicknesses, and their solubility, removal behavior, and tendency to leave residues on the graphene surface were investigated. Raman spectroscopy was used to confirm the presence and continuity of the graphene layer after transfer, while optical microscopy was employed to observe surface features and residual contamination originating from the support layers.

The results demonstrate that the choice of support layer influences the quality of the transferred graphene. This work provides comparative insight into commonly used and alternative support materials for graphene transfer onto solid surfaces.