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Large area nanometer thickness graphite freestanding film without transfer process

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Abstract

We fabricated the large-area ($3 \times 3 \text{ cm}^2$) freestanding nanometer thickness graphite film (NGF) using transfer free process. NGF was grown on Cu foil using CVD and Cu foil is used as the frame of NGF freestanding film. Thickness of the NGF was controlled by gas flow and growth time. Transfer-free process was achieved by selective etching of Cu foil and dipping NGF in alcohol of low surface tension. Freestanding NGF reveals excellent EUV transmittance. This method allowed us to simplify the fabrication process for freestanding film without transfer process and demonstrated a possibility for HVM of pellicle for EUV lithography.

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