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【210】On-surface synthesis of graphene nanoribbons on the superconducting Ag/Nb(110) substrate

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Graphene nanoribbons (GNRs) with zigzag edge segments are able to host unpaired spins, which may exhibit topological end states via the interaction with superconductivity. Due to the need for a clean method to introduce superconductivity to GNRs, we propose to grow atomically precise GNRs via Ullmann coupling on the superconducting Ag/Nb(110) substrate. Through the investigation with scanning probe microscope at 4.7K, we show successful synthesis of different carbon-based configurations using only one type of molecule precursor, and confirm the proximity-induced superconductivity on these structures. We believe our results provide a new approach to study the interplay between GNR topology and superconductivity.

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