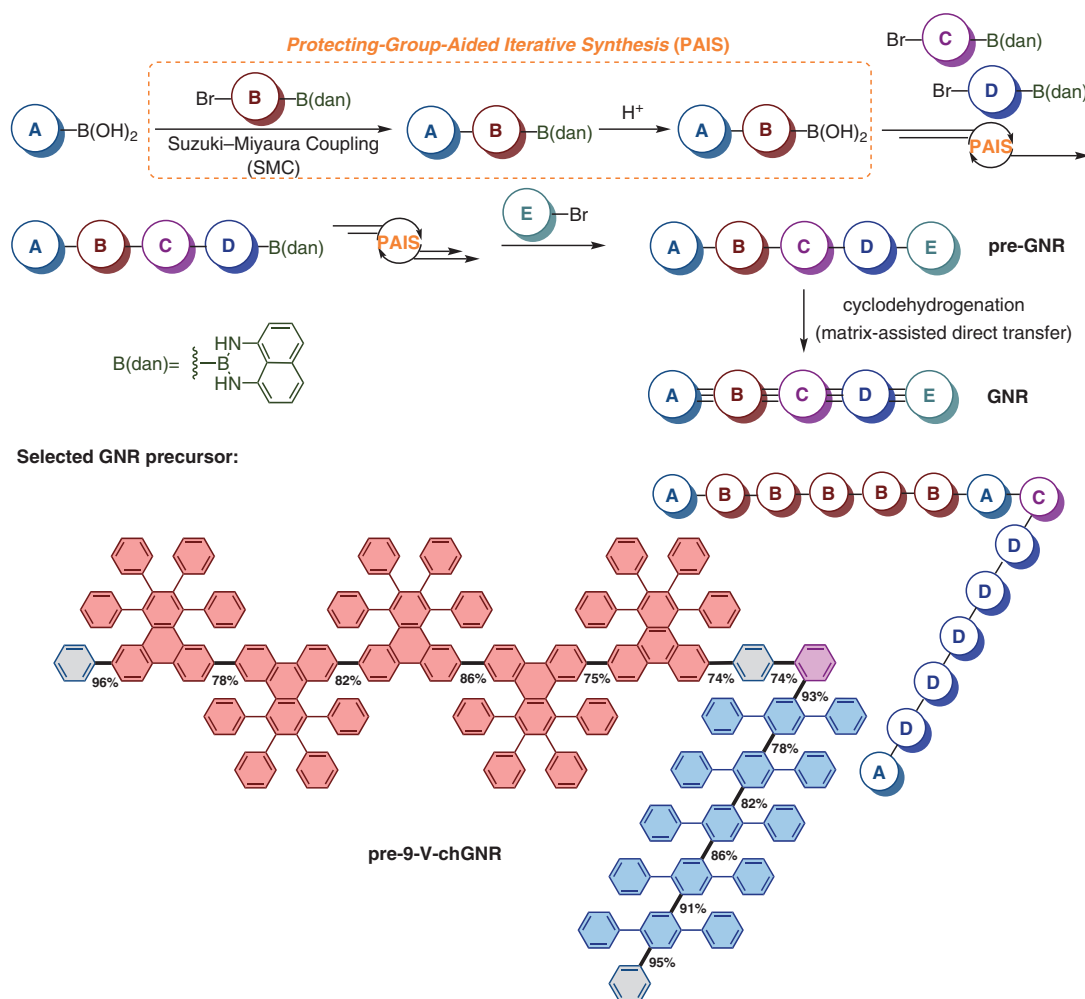


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Programmable Fabrication of Monodisperse Graphene Nanoribbons via Deterministic Iterative Synthesis
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Modular Syntheses of Defined Graphene Nanoribbons



Significance: The accomplishment of bottom-up syntheses of graphene nanoribbons (GNRs) with controlled, well-defined structures will open up a new stage for graphene functionalization, fabrication, and application. Here, by introducing 1,8-diaminonaphthalene (**dan**) as a handy protecting group for the boronic acid to attain iterative site-selective Suzuki–Miyaura cross-coupling (SMC), programmable fabrication of sequence-controlled GNRs is achieved.

Comment: The developed method, so called protecting-group-aided iterative synthesis (PAIS), is demonstrated to be suitable for the construction of tailored, monodisperse GNRs. The masking group **dan** is the key to the precise sequence control, which is readily transformed into reactive boronic acid upon exposure to acid and enables SMC for subsequent chain extension. The final GNRs are eventually obtained upon cyclodehydrogenation, either in solution or on the surface.

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