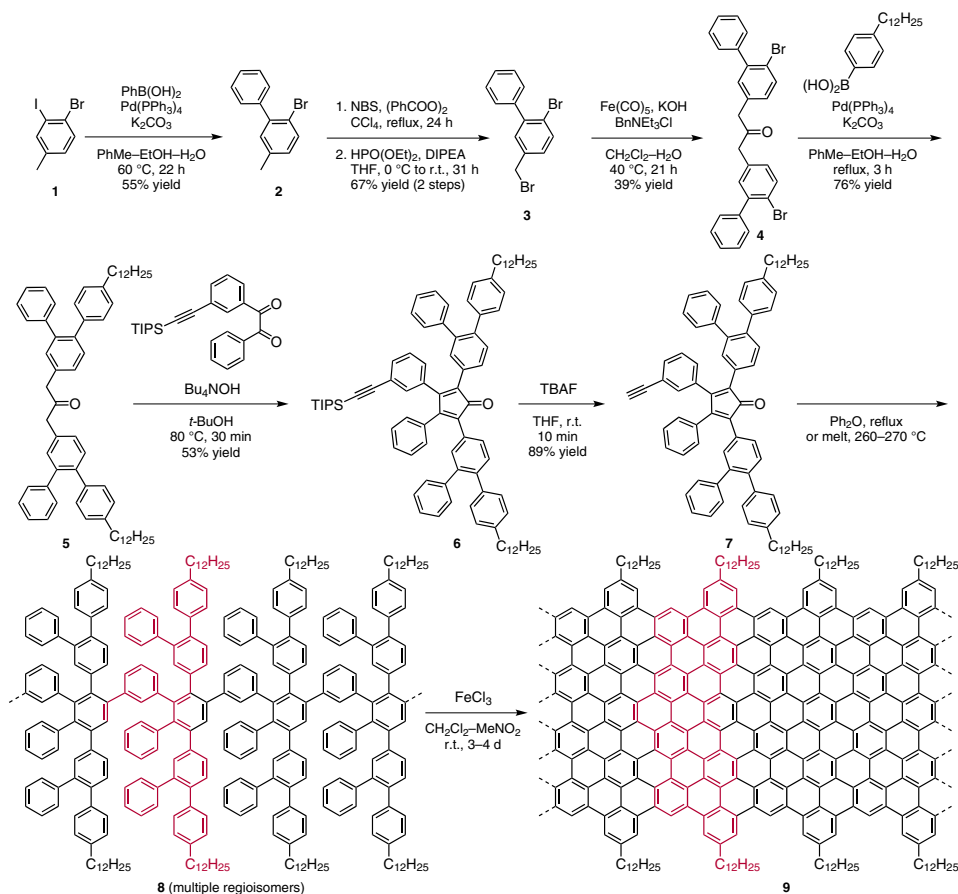


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Bottom-Up Synthesis of Liquid-Phase-Processable Graphene Nanoribbons with Near-Infrared Absorption
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A Diels–Alder Approach to Graphene Nanoribbon Precursors



Significance: Bottom-up approaches to graphene nanoribbons (GNRs) have been limited by the short length of nanoribbons produced (<50 nm) or the requirement for metal surfaces. The authors report a bottom-up approach to the synthesis of longer (>100 nm), structurally defined GNRs using an AB-type Diels–Alder polymerization to form nanoribbon precursors **8** that can be planarized to GNRs **9** by oxidative cyclodehydrogenation with FeCl_3 .

Comment: Despite the formation of multiple regioisomers after the Diels–Alder polymerization of asymmetrical monomer **7**, upon planarization, all isomers of **8** yielded an identical GNR structure (**9**). Polymerization of **7** was carried out both in solution and melt, with melt yielding GNR precursors of significantly higher M_w (230,000–550,000 g/mol versus 42,000–78,000 g/mol for solution polymerization).

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