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## **【215】 Fusion of alkyl groups to form phenyl rings: a new on-surface reaction**

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On-surface synthesis allows to design carbon nanostructures such as graphene nanoribbons with atomic precision. However, the variety of conceivable structures critically depends on the number of available reaction concepts. Here, we present a new surface-assisted reaction allowing for the controlled fusion of two alkyl groups to form a phenyl ring. Scanning tunneling and non-contact atomic force microscopy images at different stages of the reaction along with DFT simulations allow to elucidate the reaction mechanism. Furthermore, we study the influence of surface templating by comparing the reaction on Au(111) and Au(110). The selective formation of phenyl rings by the fusion of alkyl groups on-surface is unprecedented, and introduces a powerful new motif in the design of novel nanomaterials.

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