

Abstract Submitted
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Polycyclic carbon molecules with zigzag edges as sources of defects in graphene on a metal ALEXANDRE ARTAUD, CEA Grenoble, F-38000 Grenoble, France, LAURENCE MAGAUD, CNRS, Institut Néel, F-38000 Grenoble, France, KITTI RATTER, CNRS, SIMAP, F-38000 Grenoble, France, VALÉRIE GUISSSET, PHILIPPE DAVID, CNRS, Institut Néel, F-38000 Grenoble, France, BRUNO GILLES, CNRS, SIMAP, F-38000 Grenoble, France, JOHANN CORAUX, CNRS, Institut Néel, F-38000 Grenoble, France, CLAUDE CHAPELIER, CEA Grenoble, F-38000 Grenoble, France — Unlike the armchair edge, the zigzag edge of graphene breaks the equivalence of its two constituting carbon sub-lattices. Uncompensated magnetic moments are thus expected for such edges. For the same reason, dense polycyclic molecules (PCMs) terminated by zigzag edges are predicted to host net magnetic moments. Unfortunately, their synthesis is challenging. One approach relies on the pyrolysis of hydrocarbons, catalyzed by a transition metal. Here we investigate this little-explored approach, and put in evidence the formation of a series of highly symmetric zigzag edge PCMs onto Re(0001), among which phenalene, coronene and sumanene. We also address the relationship between the preparation of such molecules and graphene, which both form following hydrocarbon pyrolysis. We establish that the PCMs are unexpected obstacles towards high quality graphene.

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