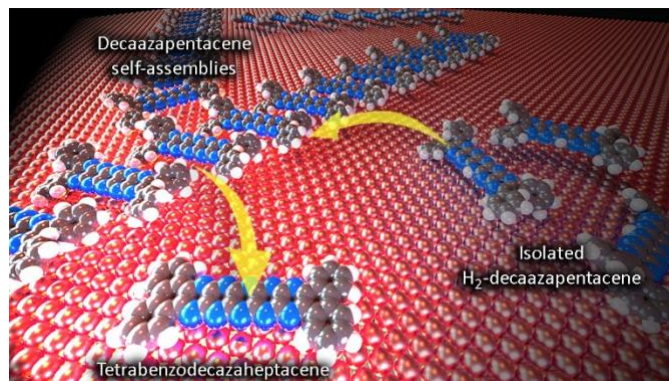


A Paragon of Pyrazinacene Science

- Oxidation state-structure coupling of decaazapentacene at a copper surface –

Acenes are an important class of compounds not only because of their properties as organic semiconductors but also due to their interesting electronic structures. Until recently, a significant absence from this class of compounds has been those highly substituted with nitrogen atoms otherwise known as the pyrazinacenes. In this work, we report the on-surface characteristics of two important congeners of this family of compounds, namely octaazatetracene and decaazapentacene. These compounds were challenging to obtain from the point-of-view of their synthesis and also presented special difficulties based on the availability of multiple nitrogen atoms at their peripheries. Variability of oxidation state in the compounds provided access to hitherto unknown decaazapentacene derivatives and an unusual dependence of their on-surface structures on the respective oxidation states of different derivatives available by on-surface manipulation. These pyrazinacenes illustrate the benefits of the high N-doping of existing organic semiconductor molecules.



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