

Effects of Monolayer Bi on the Self-Assembly of DBBA on Au(111)

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PII: S0039-6028(17)30360-6  
DOI: [10.1016/j.susc.2017.08.008](https://doi.org/10.1016/j.susc.2017.08.008)  
Reference: SUSC 21072

To appear in: *Surface Science*

Received date: 19 May 2017  
Revised date: 26 July 2017  
Accepted date: 5 August 2017

Please cite this article as: Guo Tian , Yixian Shen , Bingchen He , Zhengqing Yu , Fei Song , Yunhao Lu , Pingshan Wang , Yongli Gao , Han Huang , Effects of Monolayer Bi on the Self-Assembly of DBBA on Au(111), *Surface Science* (2017), doi: [10.1016/j.susc.2017.08.008](https://doi.org/10.1016/j.susc.2017.08.008)



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**Highlights**

- A collective phase transition is dependent on the coverage on Au(111) while a hexamer phase is independent on coverage on Bi- $3\times\sqrt{3}$ -Au(111) surface.
- The results reveal the competing between intermolecular interactions and interfacial interactions.
- There is no GNRs formed on Bi- $3\times\sqrt{3}$ -Au(111) after annealing.
- Density functional theory (DFT) calculations confirm the configuration change of DBBA molecule on Au(111) and Bi- $3\times\sqrt{3}$ -Au(111) surface and the important role of the substrate assistance to form GNRs.

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