

Growth of Germanium on Highly Oriented Pyrolytic Graphite

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Abstract

We have studied the growth of germanium on highly oriented pyrolytic graphite (HOPG) using scanning tunneling microscopy and spectroscopy. The deposited germanium atoms, which are very dynamic at room temperature, preferentially stick to the pre-existing step edges of the HOPG. The germanium stripes at the step edges exhibit a triangular structure with a lattice constant that is about 30-50% larger than the lattice constant of the HOPG. The triangular germanium lattice is rotated by 30° with respect to the underlying HOPG lattice. Unfortunately the germanium stripes are rather dynamic at room temperature, which makes it difficult to perform accurate scanning tunneling microscopy measurements. Scanning tunneling spectroscopy measurements reveal that the germanium stripes are metallic. Based on our observations we suggest that we are dealing with high-buckled germanene [1].

References

[1]. S. Cahangirov, M. Topsakal, E. Aktürk, H. Şahin and S. Ciraci, *Phys. Rev. Lett.* **102**, 236804 (2009).