



## **What's up about growth and atomic structures of silicene monolayers on silver substrate**

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### **Abstract:**

Silicene is the counter part of graphene for silicon i.e. a single atomic layer of silicon in a honeycomb structure. The first theoretical works have shown that silicene has an intrinsic stability with electronic properties close to that of graphene, even though its atomic structure is not perfectly plane as graphene but presents a buckling in relation to a mixed sp<sup>2</sup>-sp<sup>3</sup> hybridization of silicon atoms [1]. Experimentally, the first results showing a silicon monolayer with a “graphite-like” structure (honeycomb structure) have been obtained on the silver substrate[2].

In this presentation after a brief recall of the main results obtained on this substrate we will try to explain via the epitaxial strain effects all superstructures and defects observed by STM (Scanning Tunneling Spectroscopy) and LEED (Low Energy Electron Diffraction)[3].

- [1] G. Guzmán-Verri and L. Lew Yan Voon, “Electronic structure of silicon-based nanostructures,” *Phys. Rev. B*, vol. 76, no. 7, p. 75131, Aug. 2007.
- [2] A. Kara, et al., “A review on silicene — New candidate for electronics,” *Surf. Sci. Rep.*, vol. 67, no. 1, pp. 1–18, Jan. 2012.
- [3] H. Jamgotchian, et al., “A comprehensive study of the (2√3x2R3)R30 structure of silicene on Ag(111),” *J. Phys. Condens. Matter*, vol. 27, p. 395002, 2014.

Contribution: Invited