

Silicene' s cousins: advanced synthetic low-dimensional elemental materials beyond graphene

Professor Guy Le Lay

Aix-Marseille University, CNRS, PIIM, Marseille, France

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場 所:マテリアルサイエンス系研究棟IV棟8階 中セミナー室

講演要旨:

After the first realizations in 2012 of prototypical epitaxial **silicene** phases on silver and zirconium diboride surfaces the synthesis of other column IV siblings of graphene, namely **germanene** and **stanene**, has been quickly achieved. These novel exotic forms of Si, Ge and Sn may help prolong Moore's law, since such two-dimensional (2D) materials seem directly compatible with the current silicon-based technology. Furthermore, they may also find applications in spintronics and quantum computing since they are predicted to be robust 2D topological insulators hosting the quantum spin Hall effect at accessible temperatures.

In my talk, I will describe the growth and promising properties of these novel 2D allotropes, as well as those of their multi-layer partners. Furthermore, upon reducing the dimensionality, I will present a striking array of massively parallel **1D pentasilicene-like nanoribbons** and **0D, benzene-like, nanodots**.

講演者略歴:

- 1968 Engineer, École des Mines, Nancy, France
- 1972 Doctor of Engineering, University of Provence, France
- 1977 Doctor of State, University of Provence, France
- 1981 Full Professor, Department of Physics, University of Provence, France
- 2012 Full Professor, Department of Physics, Aix-Marseille University