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Nota di contenuto	Introduction -- Fundamentals -- Experimental methods -- Thallium biatomic layer -- Thallium-lead monatomiclayer compound -- Intercalation Compounds of Bilayer Graphene -- Conclusion.
Sommario/riassunto	This thesis presents first observations of superconductivity in one- or two-atomic-scale thin layer materials. The thesis begins with a historical overview of superconductivity and the electronic structure of two-dimensional materials, and mentions that these key ingredients lead to the possibility of the two-dimensional superconductor with high

phase-transition temperature and critical magnetic field. Thereafter, the thesis moves its focus onto the implemented experiments, in which mainly two different materials thallium-deposited silicon surfaces and metal-intercalated bilayer graphenes, are used. The study of the first material is the first experimental demonstration of both a gigantic Rashba effect and superconductivity in the materials supposed to be superconductors without spatial inversion symmetry. The study of the latter material is relevant to superconductivity in a bilayer graphene, which was a big experimental challenge for a decade, and has been first achieved by the author. The description of the generic and innovative measurement technique, highly effective in probing electric resistivity of ultra-thin materials unstable in an ambient environment, makes this thesis a valuable source for researchers not only in surface physics but also in nano-materials science and other condensed-matter physics.