

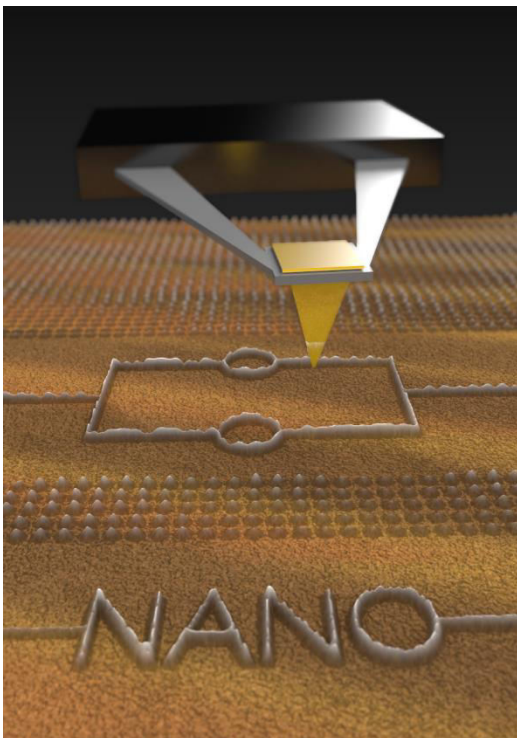
Advanced Scanning Probe Lithography for nanopatterning and nanoelectronics

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The nanoscale control afforded by scanning probe microscopes has prompted the development of a wide variety of scanning probe-based patterning methods. Some of these methods have demonstrated a high degree of robustness and patterning capabilities that are unmatched by other lithographic techniques. However, the limited throughput of scanning probe lithography has prevented their exploitation in technological applications. Here, we review the fundamentals of scanning probe lithography and its use in materials science and nanotechnology¹. We focus on the methods and processes that offer genuinely lithography capabilities. Specifically, we describe the applications of oxidation SPL for nanopatterning and device fabrication of nanoscale field-effect transistors, molecular architectures and two-dimensional electronic materials.

1. R.Garcia, A.W. Knoll, E. Riedo, Advanced scanning probe lithography. *Nature Nanotechnology* **9**, 577-587 (2014)
2. F.M. Espinosa, Y. K. Ryu, M. Kolyo, A. Kis, R. Garcia, Direct fabrication of thin layer MoS₂ field effect nanoscale transistors by oxidation scanning probe lithography. *Appl. Phys. Lett.* **106**, 103503 (2015).



Scheme of scanning probe lithography