

Engineering atomic and molecular nanostructures at surfaces

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The fabrication methods of the microelectronics industry have been refined to produce ever smaller devices, but will soon reach their fundamental limits. A promising alternative route to even smaller functional systems with nanometre dimensions is the autonomous ordering and assembly of atoms and molecules on atomically well-defined surfaces. This approach combines ease of fabrication with exquisite control over the shape, composition and mesoscale organization of the surface structures formed. Once the mechanisms controlling the self-ordering phenomena are fully understood, the self-assembly and growth processes can be steered to create a wide range of surface nanostructures from metallic, semiconducting and molecular materials.

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