

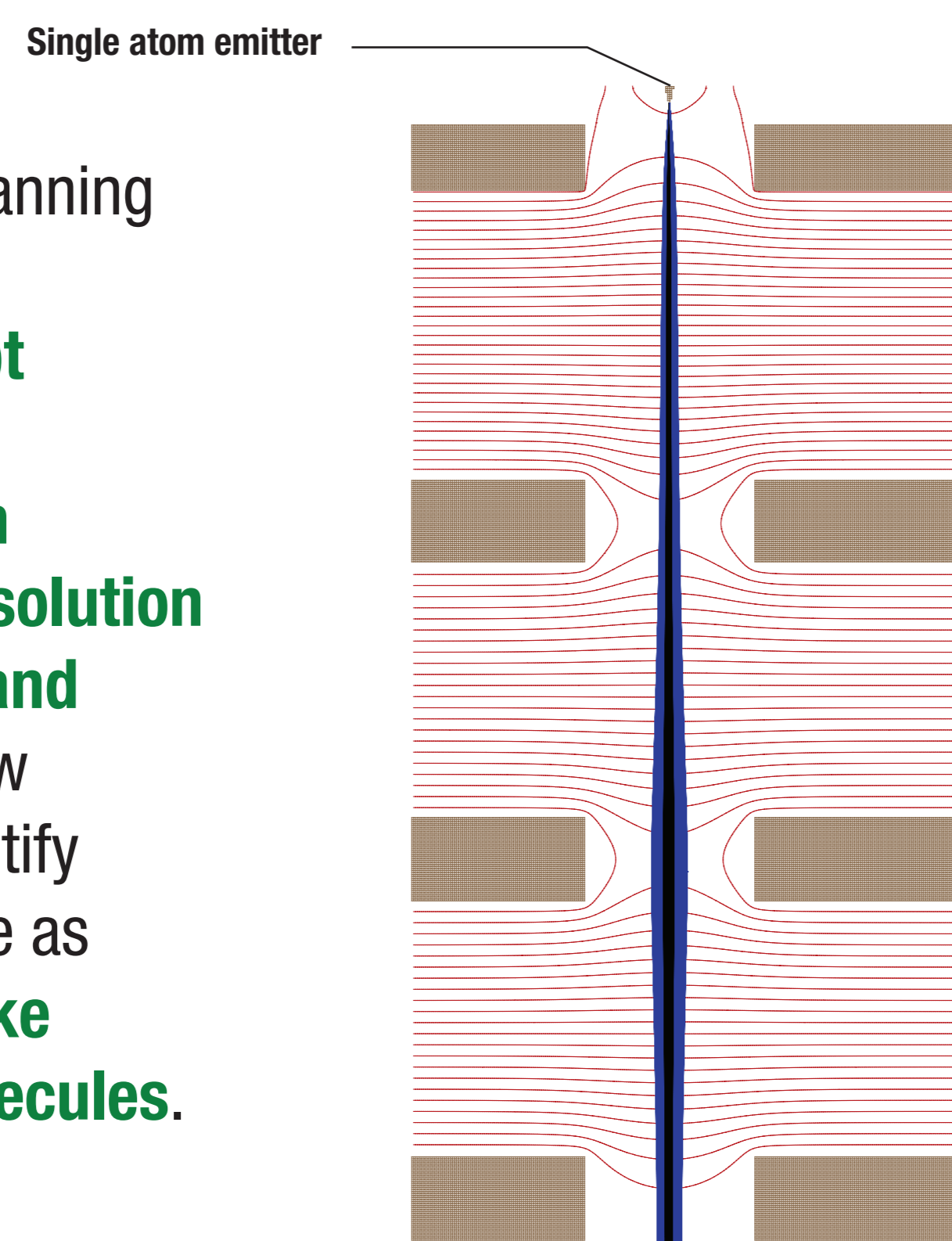
# Generating a Revolution in Electron Microscopy



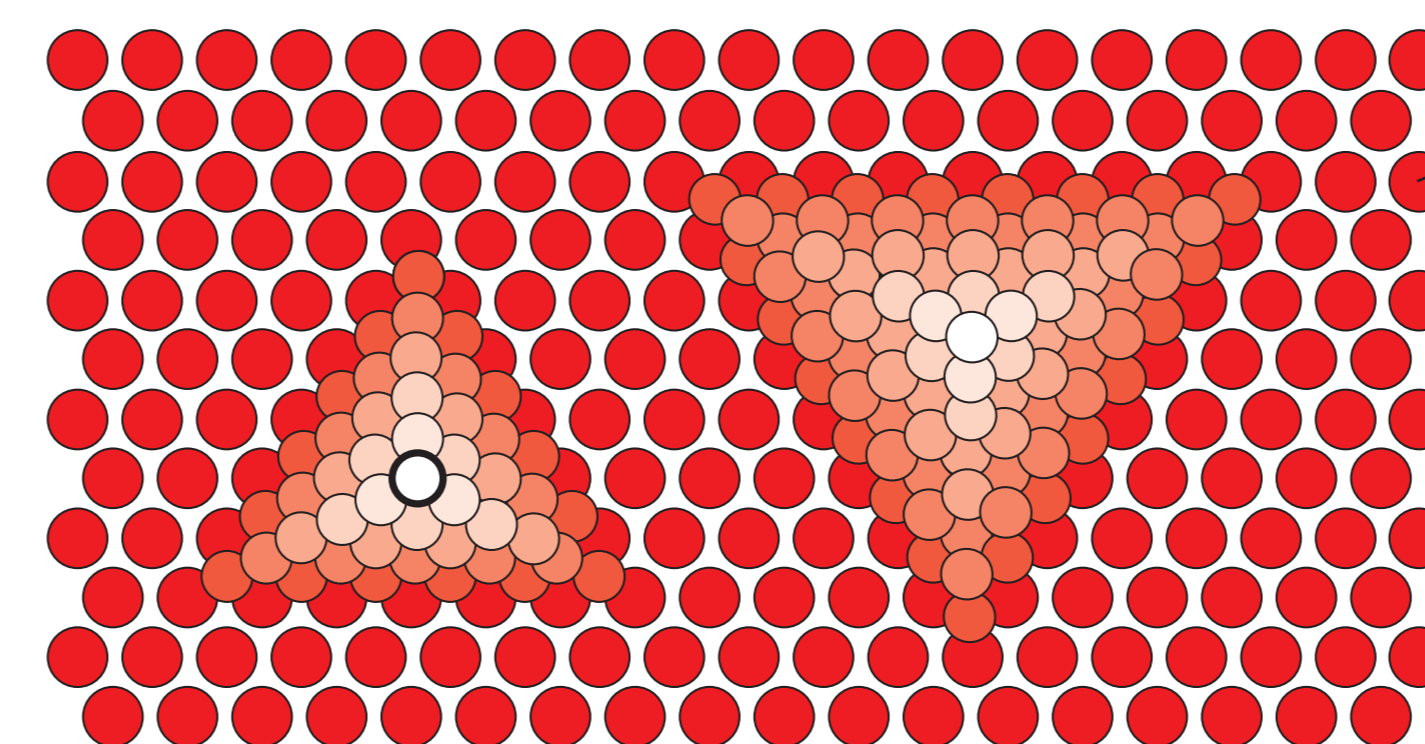
**NFAB** is a knowledge-based company committed to the design and development of new nanotools especially in the area of focused electron and ion beam technology. **It has patented an enabling technology\* which will allow a generation of miniature scanning electron microscopes, multiple-beam lithography machines and focussed ion beam millers to be manufactured.** These are currently under development and testing at various European Universities and nanotechnology companies under an EU-funded collaborative research grant (CRAFT).

NFAB's sub-miniature scanning electron microscope is a **completely new concept** in electron microscopy. **The microscope is 5  $\mu\text{m}$  long and has atomic resolution (2  $\text{\AA}$ ) at 500 eV energy and 10 nA of current.** The low energy means it can identify single atoms on a surface as well as being able to **make holograms of large molecules.**

**The magnification is 1 and the focal length is 7  $\mu\text{m}$ .**  
**The aberrations contribute less than 0.2  $\text{\AA}$  to the spot size.**

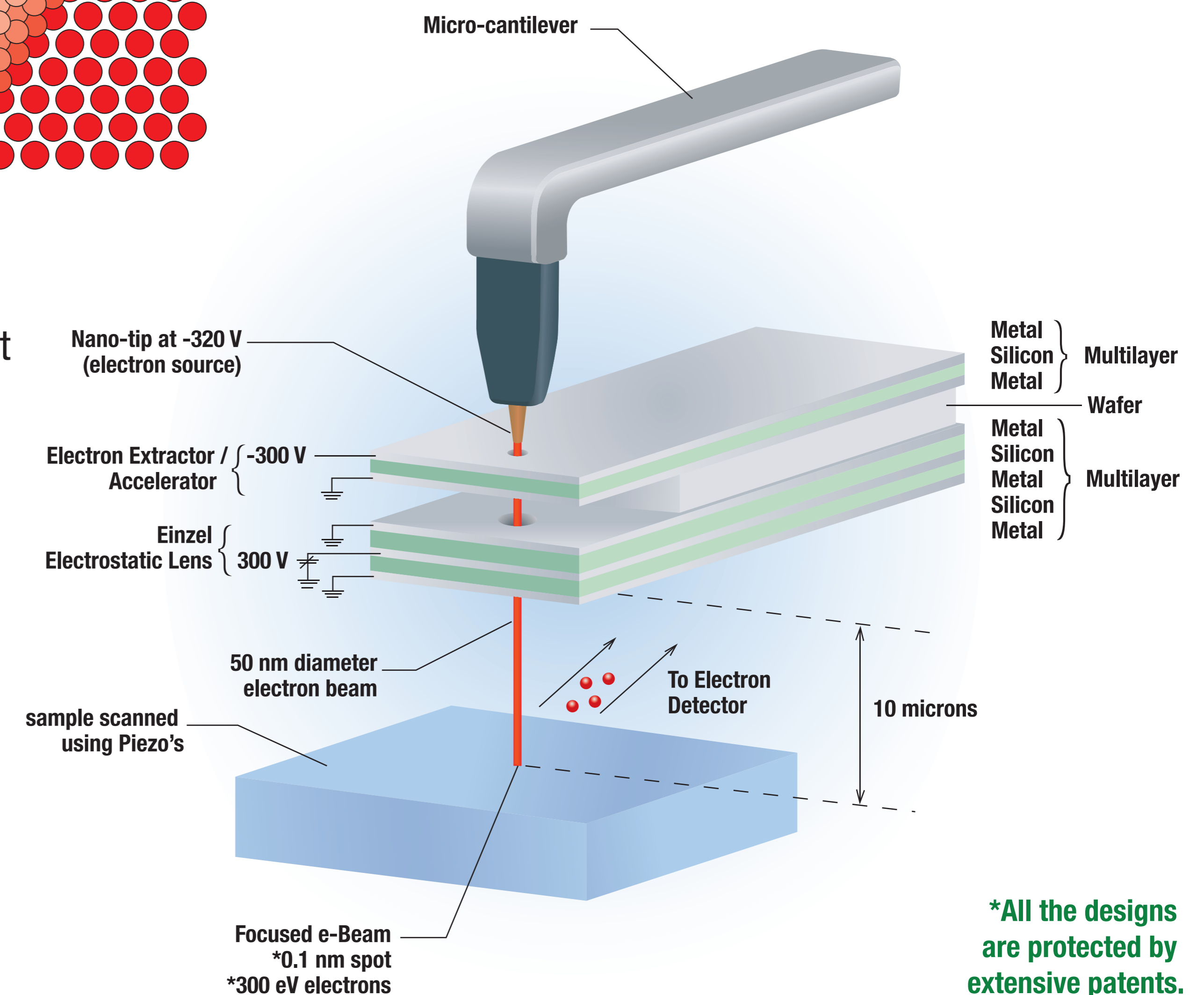


All of the component parts can be manufactured by existing commercial technology. For example, the electron source is a gold nanopillar. These (shown below) can be routinely manufactured in nanotechnology laboratories. The microscope body is manufactured by standard MEMS techniques.



The gold atoms can be formed into a perfect tetrahedron with only the top atom emitting up to 10 nA of electrons.

The final packaged instrument will be a microtip with the microscope on the end rather like an STM with an electron beam focussed to atomic sizes. Because the depth of field is large and the beam current is high, it will scan much more quickly than an STM, can study practical surfaces and can identify atoms directly from the elastic scattering.



**\*All the designs are protected by extensive patents.**



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