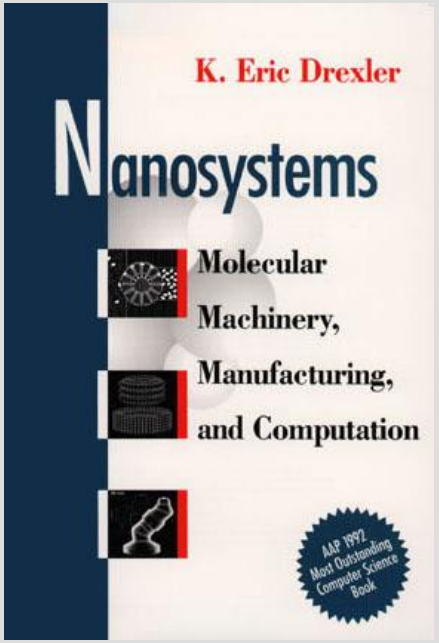
Richard Feynman,1959
(the great visionary)

There's plenty of room at the bottom

The principles of Physics, as far as I can see, do not speak against the possibility of maneuvering things atom by atom.

Richard P. Feynman

Eric Drexler, 1992
(the great pioneer)



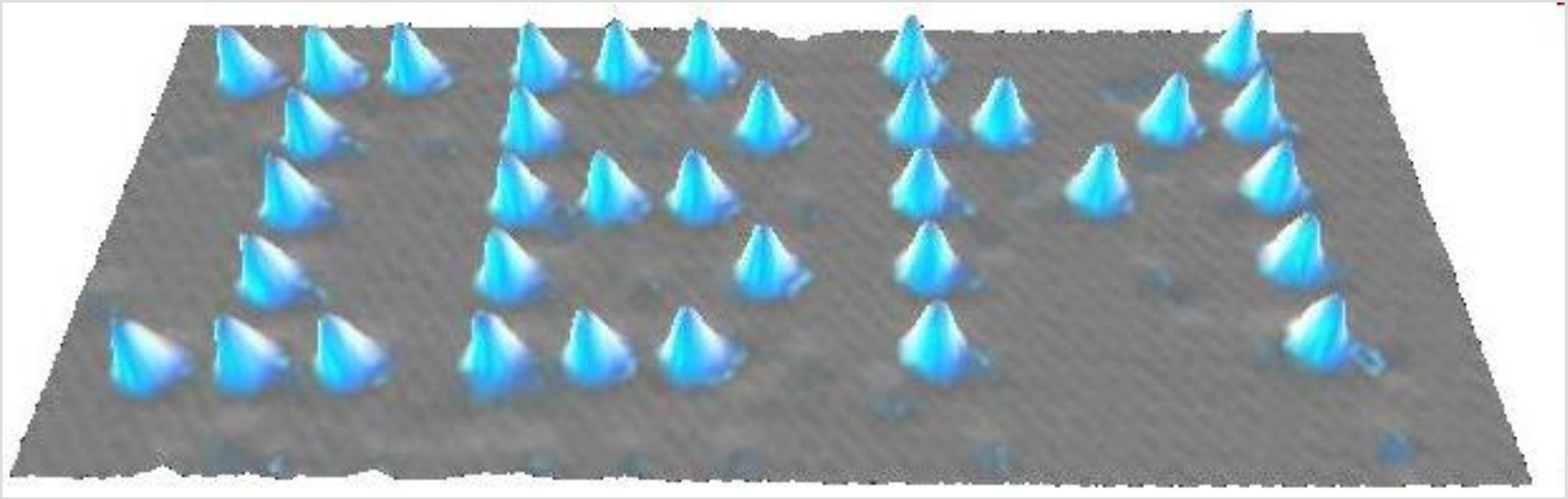
Nanotechnology is the principle of atom manipulation atom by atom, through control of the structure of matter at the molecular level. It entails the ability to build molecular systems with atom-by-atom precision, yielding a variety of nanomachines.

Eric Drexler

Manipulation Atom-by-Atom

IBM

35 Xe atoms put together on nickel



Don Eigler (IBM, California), 1989
Became the 1st person to move atoms

Nanotechnology is concerned with developing the tools for characterizing and manipulating materials on nanoscale (1-100 nm) and exploiting these tools for the development of new products and processes.

Narrow definition: at least 2 dim are below 100 nm

Extended definition: one dimension below 100 nm and a second dimension below 1 μm.

Nanostructure

Based on their geometrical dimension with reference to an external reference system, *viz*., substrate.

Nanodevice

At least one functional component is a nanostructure.

Nanosystem

Consists of several nanodevices that are of importance for the functioning of the whole system.

Advantages of starting from "small things"

you can dissolve sugar or salt quicker when it is in powder form and slower when it is in the form of crystals or blocks

smaller can become more reactive

Advantages of starting from "small things"

- Properties can be altered as desired
- More precision
- Less waste

Nano Materials

- Quantum Dot
- Single Electron Transistor
- GMR
- Spintronics