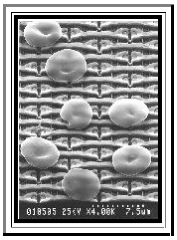
Particles on Chips

Illustration

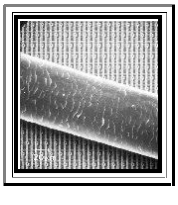
Here you can see a collection of ***SEM*** pictures which not only illustrate graphically the "particle" problem in making chips, but also have a certain esthetical appeal

Click on the link for an enlarged view.



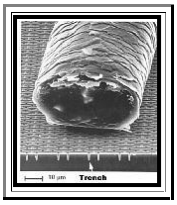
Red blood cells on a **1 Mbit** memory

(large size)



Hair (from a female) on a **256 kbit** memory chip. Just one of the little flakes of the hair would be enough to cover one memory cell.

(large size)

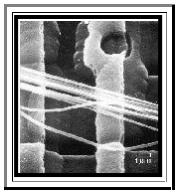


Hair on a **4Mbit** memory chip. - just to show how structure sizes decrease.

(large size)

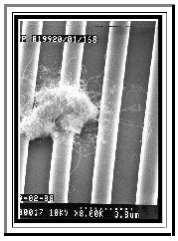
Here a metal particle, probably a tiny drop of **Al** that was burnt of by a an electrical discharge in a sputtering machine and hit the **Si** as a solidified droplet . It was coated with **Al** which was subsequently structured by etching. Four conducting lines are now short circuited.

(large size)



Mother nature is still ahead when it comes to small structures. Here we see spiderwebs on a **256 k DRAM**. A typical strand of spider silk consists of several individual strings with diameters around **0.2 µm**.

(large size)



Here is a particle of unknown nature. Whatever it is, it will kill a chip.

(large size)