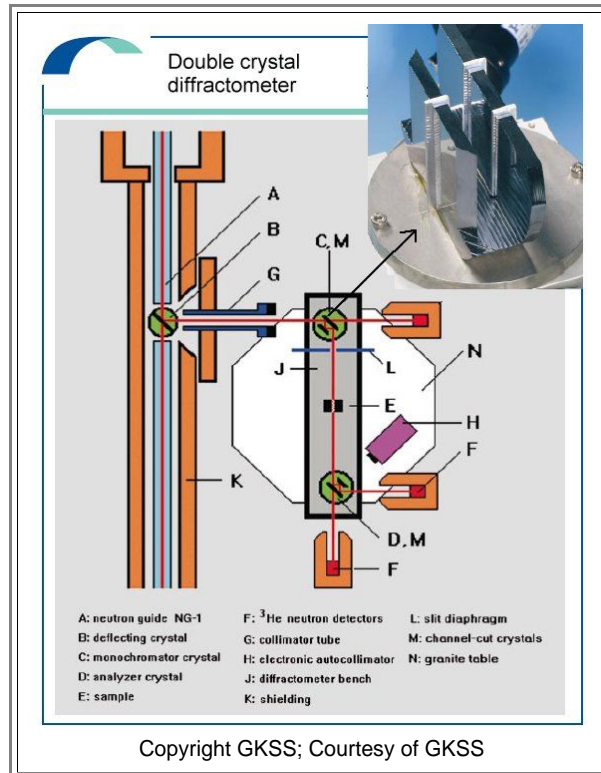


Exotic Uses of Silicon

Advanced

Here are a few of the more *exotic* uses of **Si**. I keep this brief; details might be filled in later.

- The [kilogram standard in Paris](#) is getting lighter - nobody knows why. Efforts are under way to use a perfect **Si** crystal as the new standard. In addition, this would also serve to determine [Avogadro's constant](#) to a better accuracy.
- Very precise mirrors, possibly coated with a sequence of layers to act as **X-ray mirrors**, need practically atomically flat substrates of considerable lateral extension. Your run-of-the-mill **300 mm Si** wafer is already much closer on this target than anything you can make with all possible tricks from a piece of glass or metal, for example.
- The picture below shows a **neutron diffractometer** using **Si** crystals in three places. The inset shows one of the "slotted" rather large **Si** crystals. The principle is that only neutrons with a wavelengths meeting the [Bragg condition](#) will be reflected.



- There are things like "**Photonic crystals**" and other novel optical components made from **porous Si**.
- There are even **high explosives** made from [porous Si](#); also all kinds of sensors, electrodes for micro fuel cells, and much more. For some details activate the link
- Finally and ironically: **Mechanical watches** of the expensive to extremely expensive variety (Jaeger-LeCoultre,...) have started to use **Si** parts inside. Of course, using **Si** for making a simple "watch" chip and a **SiO₂** crystal for the frequency normal allows to make a much better watch at a tiny fraction of the costs of a mechanical one.