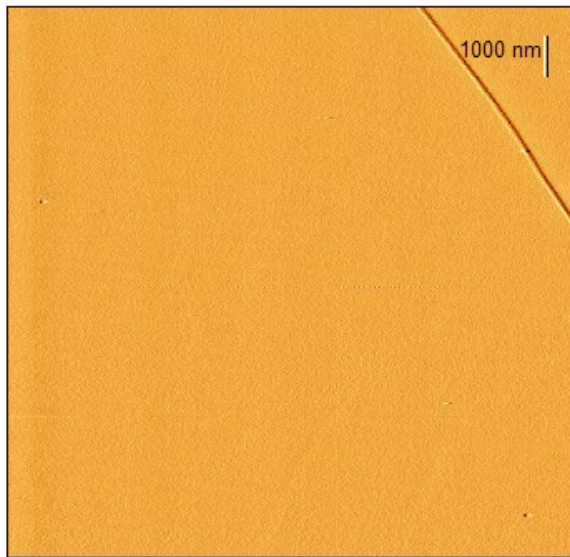


HAPG is a new high quality pyrolytic graphite



AFM image of the surface of
cleaved HAPG.

Highly oriented pyrolytic graphite (HOPG) is one of the most common substrate in scanning probe microscopy. The substrate has a number of useful properties:

- The clean surface can be obtained quick and easy by cleaving with adhesive tape;
- The surface has atomically smooth large areas;
- Graphite has a high conductivity.

HOPG is a synthetic graphite. Originally HOPG was created for use as monochromators for neutrons and X-rays, as a material for

thermal management and other applications for which strictly parallel layers in graphite were required. However, the price for an almost perfect parallelism of the layers was a higher content of defects in the material, which is not desirable for scanning probe microscopy.

A range of materials with different properties can be obtained by changing the synthesis conditions of graphite. In particular, it is possible to synthesize graphite with minimum number of defects. Precisely this graphite (HAPG) was synthesized for you by Optigraph.

Atomic force microscopy showed the highest perfection of cleaved HAPG. In comparison with standard HOPG samples with mosaic spread of 0.4° or 0.8° , HAPG samples contain much less defects such as cleavage steps, edge dislocations, grain boundaries. A defect-free region with the area of more than $100 \mu\text{m}^2$ can be easily found on the surface of cleaved HAPG. The quality of the surface of cleaved HAPG is similar to mica, which is widely used in scanning probe microscopy.

An important HAPG application is graphene preparation by micromechanical cleavage. Using HAPG you will get thinner graphene samples with less defects.