



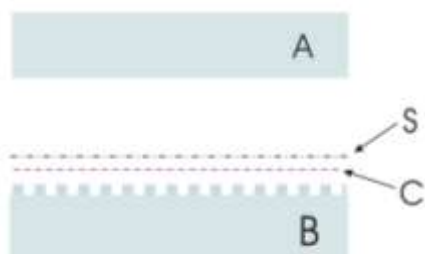
## Preparation of a DVD as a XY calibration sample

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### Short abstract

A DVD sample can be easily imaged by AFM, and the regular structures of the DVD tracks can be used as a cheap calibration sample for XY scanner check. This recipe describes how to prepare a DVD sample for AFM observation of its inner surface. The DVD image will show equally spaced tracks, produced according to the international standard ECMA 349 [1], the track pitch shall be  $0,74 \pm 0,03 \mu\text{m}$  (4%).

### Step-by-step description of procedure



The DVD is composed of two plastic layers ( A and B) of transparent materials, with a reflecting layer (S) and a dye deposition (C) in between. The tracks are in the inner side of the layer B. After the preparation the tracks should be exposed for AFM imaging.

1. Scrape the edge of the disc with the cutter to remove the glue.
2. Using the cutter blade cleave the two transparent layers at an edge. The two layers will easily separate. Keep the layer with the (purple) dye.
3. Cut a small piece of about 1cm x 1cm with scissors (or a disc using Disc Punch).
4. Wash the disc with a few alcohol drops to remove the dye. Repeat two or three times or deep the disc in the solvent to completely clean the surface.
5. Glue the disc on the metal specimen disc with cyanoacrilate glue (this step is required only for AFM with magnetic sample holder).



Step 4: sample washing



**Special comments** Once the dye is removed it is not very easy to distinguish the two sides of the specimen. After step 3, a scratch on the external side (the layer without dye) helps to glue the right side in step 5.

### Materials/chemicals/devices required

- Tweezers
- Cutter
- Scissors ( or Disc Punch )
- A writable DVD (es. DVD-R or DVD +R)
- Alcohol
- Metal Specimen Disc
- Cyanoacrilate Glue

### References

[1] ECMA- 349 "Data Interchange on 120 mm and 80 mm Optical Disk using +R Format – Capacity: 4,7 and 1,46 Gbytes per Side (Recording speed up to 16X).