CD/DVD spectroscope

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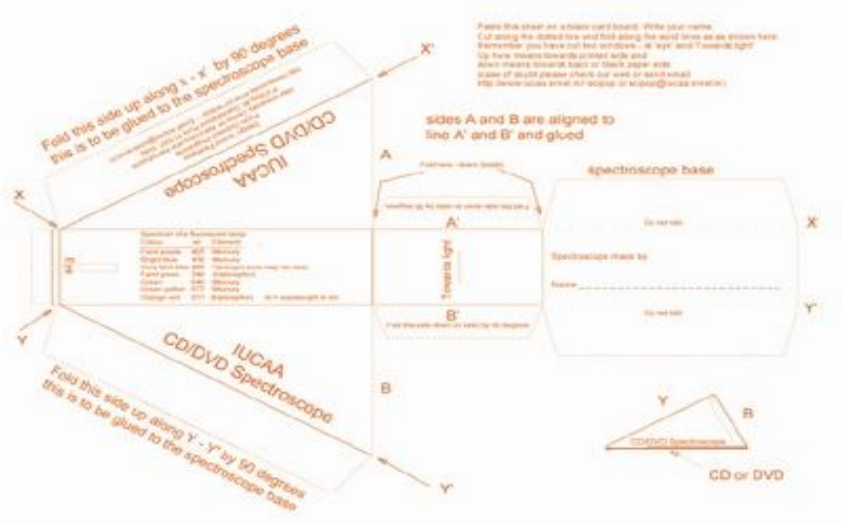
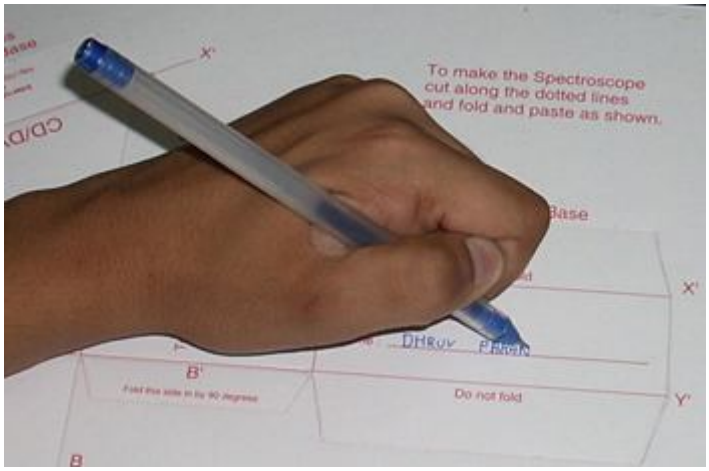


On of the major source of junk from the digital technology are the CD (*Compact Disks*) and DVD (*Digital Versatile Disc*) though these might soon meet the same fate that of computer cards or mag tapes.

Well soon after the first CD hit the market it was quite clear to the science educators experimenters that these could be used as diffraction gratings. Many versions of spectroscopes using CD/DVDs are available on the web. We at the Muktangan Science Exploratorium experimented with discarded CDs. Here we are presenting our 'best model' so far.

The first design of this kind was made in Sept/Oct 2008 for the Festical della Scienza (science festival) at Genova, Italy, that I as invited to participate from 23rd Oct 4th Nov 08. During this period about 200 spectroscopes were made everyday mostly by school children and by parents and teachers.

Follow the instructions given here. Your sheet may look some thing like this. We might add or change it a bit but the basic design is not likely to change.We begin with writing name for identification. Write your name at the space provided



... and carefully detach the 'spectroscope' from the main sheet.

One must be very careful in doing so. There might just be a bad piece that may not come out easily. So be careful.

if you have downloaded the sheet then cut along the dotted line.

Now you have to open the windows. Use thumb to push the slot open……..

If you are using the downloaded sheet, pasted on cardboard then use a good sharp knife. Be very careful - take help of an elder. You may take help of a scale of some straight edge for sharp clean cut.

.. sometimes the window might not come out clean .. you may use some pointed tool such as tip of a ball point pen or even knife

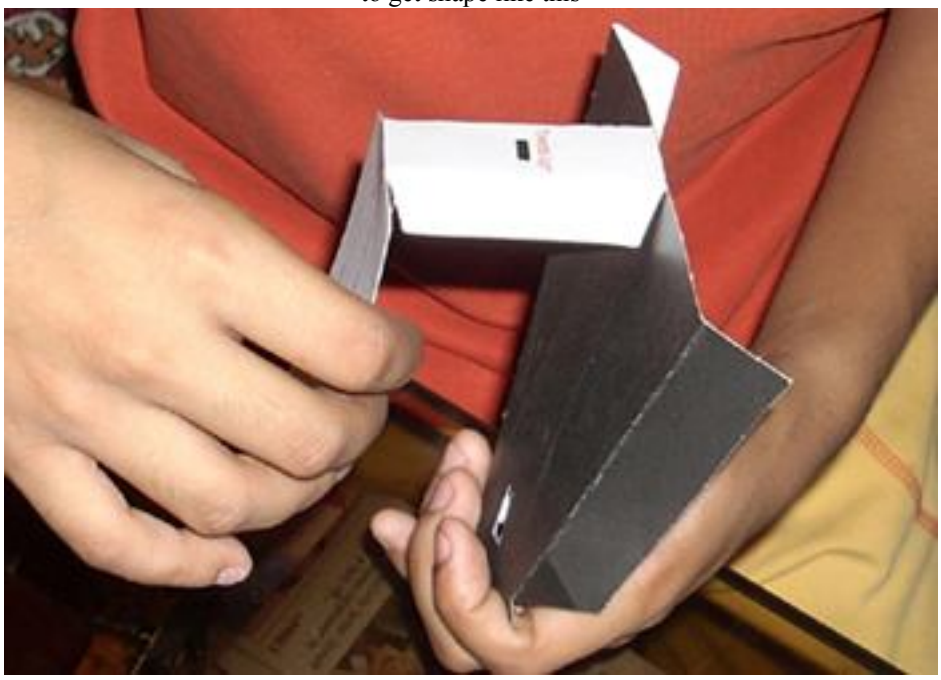
Next fold the side wings up as shown here

again you can take help of straight edge for folding

now bend A' and B' sections the as shown

..... now two more bends

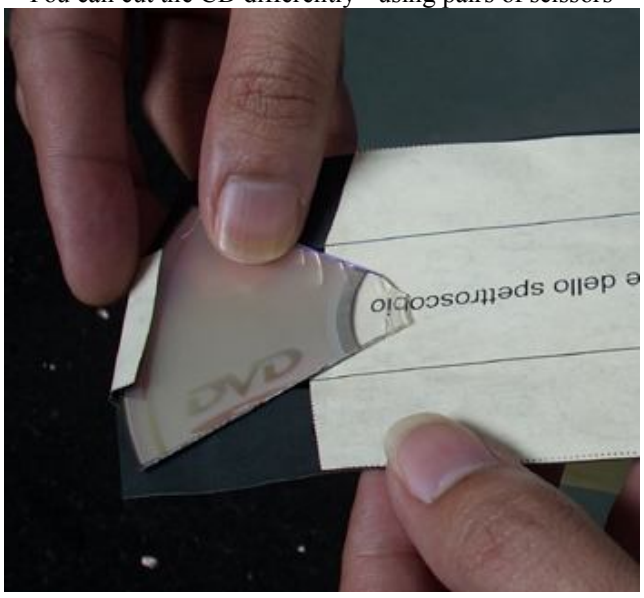
to get shape like this



.Now apply glue to side A' - B' and on the base

first glue the sides A' and B' and then glue the base

We actually do not need one full CD/DVC - a small sector is good enough.
You can cut the CD differently - using pairs of scissors

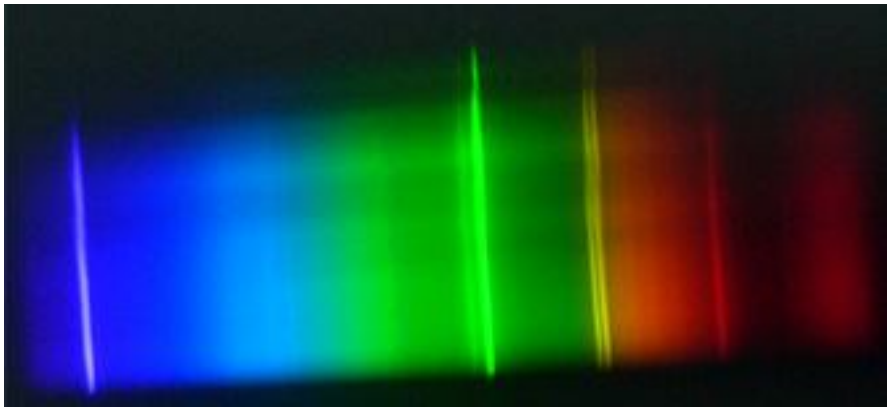


That is it - your spectroscope is ready. Point the window marked 'Towards light' to some source of light and place your eye at 'Eye' window.

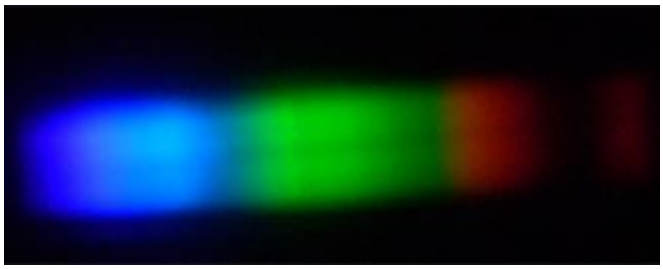
Point your spectroscope to different light sources and check out their spectra.

Try interchanging between DVD and CD - you will find that that spectra using CD are bright but short and with DVD it is more spread out but a bit dim.

Check out **why** from the links given below. The spectra will look vertical.
This is how the spectrum of the sun would like. For the Sun try making width of the 'Towards light' window smaller - you will see many more lines. Check out **why** ?



The above one is that of CFL source and the one below is that of white LED



More information:
CD (*Compact Disks*) and DVD (*Digital Versatile Disc*)
Check out 'how stuff works' and Wikipedia, the free encyclopedia for CD and DVD
Whey we can see rainbow colours using CD/DVD check out diffraction grating Wikipedia, the free encyclopedia one of best source of information is
from http://physicsworld.com/cws/home check out Diffractions Grating.