

# Refractive Art Photography

Refractive art photography covers a wide range of ideas where light is bent or refracted, a very common form is Lens Ball photography, but anything that causes bending of light to get an effect comes in this category. You can use water in a glass or prisms even using a rain drop or water drop with a macro lens.

## What is lensball photography?

[Lenballs](#) are the original crystal balls created specifically for photography, there are now different copies available I have a small Lensball and a large copy. So you need to check the quality of the glass you're buying as imperfections aren't great – you can work round a small one on the surface though, a couple of warnings however:-

- Warning they can be heavy and if dropped will chip or even break.
- The ball acts as a lens and can concentrate the sun light and can either burn you if you are holding the ball or if you leave it on shelf in sunlight they have been implicated in starting house fires.

It's useful to buy a ball with a clear stand and a bag to keep it finger print and bash free, the bag if it is microfiber will also allow you to polish fingerprints away. You can buy different sizes with 60 and 80mm being the main sizes but check the size and weight if you want to take your lensball out and about with you.

[How do crystal balls work?](#)

Glass balls for photography refract light in a very similar way to the distinctive fisheye camera lenses. Understanding this effect is the first step to mastering crystal ball photography.

**The crystal ball refracts light from a wide field of view** even if you have a narrow field of view from your camera lens. That is why the crystal ball is the fisheye effect without a lens. Check out extreme wide angle shots. They dominated late 90's skate videos. Sometimes, the distortion is so strong that you even see a vignette effect.

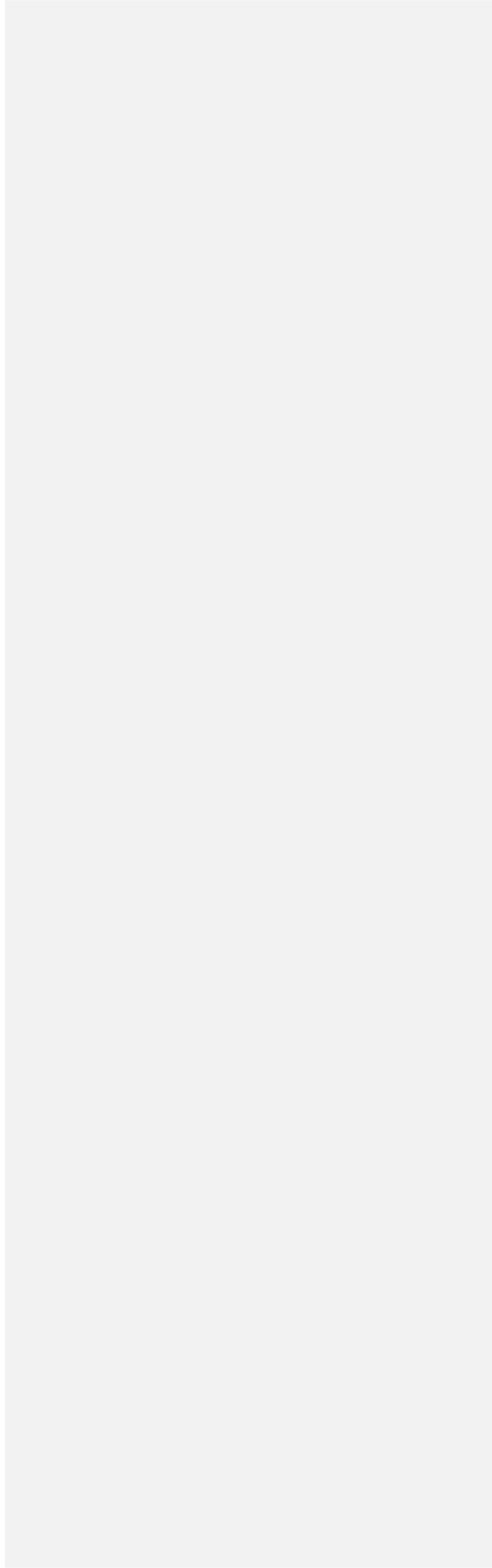
The lensball photography works by refracting the light, inverting the subject behind the sphere.

Using the glass ball isn't as easy as people expect. There are some tips I've discovered in using mine, and most come down to practising. Like any other photography, have your camera and lensball with you otherwise you can't use it.

#### Refraction photography subject ideas

- Sunsets
- nature – flowers, trees, water
- landscapes
- the sky
- buildings and structures
- people
- coloured paper with lines





## Lens ball photography tips

1, Protect your lensball in a sock or soft padded bag for transport. Have a soft cloth to hand to wipe off fingerprints.

2, Watch out for nicks in the ball. If there's just one small surface one, you can work round that with the damaged bit placing it on the ground or stand. A hint if you want to rest the ball on a hard surface without a stand sprinkle some sugar (from a packet down on the surface to stop it rolling). The sugar will dissolve in rain afterwards and doesn't cause environmental problems.

When you buy a lens ball, **think about getting a stand** too. But you don't need it, and some crystal balls even come with a stand for free! There is a stand with suction cup available from Amazon that screws on to a tripod, this will not support a ball larger than 100mm, if you know someone with a 3d printer they could make one or you could cut something from the top of a plastic drinks bottle.

3, for best results you want to understand and be able to change aperture. For the best results you want to have a low enough F stop to get the background blurry (bokeh) and the image in the ball sharp. F4 usually works fine. Think where do you want your viewers to focus?

- Open up the aperture (smaller numbers) to bring your viewer's focus to the crystal ball. Wide apertures will blur out the background. Open it up to f/1.8 and the only "focused" part of the picture will be the image inside the crystal ball.
- Narrow the aperture (bigger numbers) to bring the background in to focus. This is useful when the composition of the crystal ball is enhanced by the scene.

There is no "wrong or right" aperture for crystal ball photography, but it can have a dramatic effect on the final outcome of your work.

4, Macro or wide angle lens will work best because you need to get near enough to the subject for it to be large enough in the sphere. A macro lens lets you focus on your lens ball even if you are very close to it. The closer you get to your lens ball, the more exaggerated the background bokeh will become. This technique draws the viewer's attention directly to the image in the crystal.

Some photographers prefer a long lens and literally zoom into the lens, but wide angle shots look good too. There are many examples where the relationship between the glass ball and the other elements in the photo actually enhances the scene. Most crystal balls are relatively small, and the larger ones are very expensive.

Get closer to the ball lens and fill the frame with the image from the crystal.

Your background is going to be out of focus anyways, so scoot in tight (don't worry, the ball doesn't bite) and snap your pic!

This emphasizes the image in the crystal ball and gives your audience the most detail.

5, don't be scared of editing – sometimes you need to sharpen, and most people prefer to flip the image so the subject is back up the right way in the ball and the background is inverted.

The glass ball refraction inverts the image. This flips the image in the glass ball upside down. It is a little bit confusing at first, but you might recognize the effect:

A glass full of water also refracts light and inverts the image!

Photographers deal with this problem a few ways.

*Embrace it!*

Sometimes, it actually looks pretty cool, so roll with it.

*Flip the picture*

Take your glass ball photo, and flip it 180 degrees in light room or Photoshop.



The background is upside down now, but that is ok because it is blurred out for the most part. The image inside the ball is right side up, and your photos are looking good.



Get **creative**

So the glass ball refracts light to turn the image upside down, but you can reflect that image again to capture a right side up picture!

*Think "fisheye effect without the lens"*

6, you can hold the ball, or use a stand or support where it can sit up above the stand. You can also use natural 'beds' for it – leaves, grass, tree stumps. If you're using it in a 'bed', you can try a bit of blue tack to hold it in place (just watch it doesn't show in the photo).

7, Be aware of where the light is because the lensball will easily pick up your reflection, and the sunlight spots on the surface. You can edit out the latter. Photograph in the shadows

The best lighting for crystal ball photography is in the shadows. It is ok for your background to be well lit, but the actual crystal ball should be kept in the shadows. That is because strong light can create unwanted flares in your image. It is also difficult to properly expose an image when the ball is well lit but your background is not.

8. Keep it clean

So you cleaned your crystal ball for your next photoshoot.

Now keep it clean while you shoot! Don't handle the crystal ball with your bare hands. Try to use a pair of gloves or a clean rag when you are handling your crystal ball.

Commented [SR1]:

You probably don't want fingerprint smudges muddying up your pictures.

The crystal ball is like a lens because it refracts light. You don't want fingerprints and debris on your camera lens either. It will have the same effect.

You don't ever touch the bare glass elements of my camera lens with my hand, so you should take similar care of your lens ball.



8, Watch out – the sun can be dangerous shining through the glass and making it hot, as well as potentially setting fire to what it's shining through the ball and on to. I got a burn on my hand whilst holding a 175mm lens all for other photographers. In Sedona (Arizona) the lens ball was being held by a cowboy with thick leather gloves and within 15 seconds the glove started smouldering.



9, if you struggle to get the distance between the camera and ball, try using a tripod and remote or timer for your camera.

10, Decide on your focus and get the lighting settings right before taking the photo. Shooting in RAW will help with any corrections and more flexibility with editing later.

11, Have the whole sphere in shot (you can always crop afterwards). Think about composition rules like rule of thirds, and where the lensball would look best. Off centre catches the eye well and gives you sight of the background behind the ball.

#### 12, Align the Horizon

Get level and align the horizon of the image in the crystal ball with the horizon outside. This creative positioning creates a sense of balance in crystal ball photography. The levelling of the horizon is something we should all consider in every photograph we take.

#### 13. Additional Props for crystal ball photography

The crystal ball is a cool prop on its own, but you can create even more surreal and mysterious images by combining it with other props.

Smoke bombs, or even just haze in a can, add the ambient effects that cause an emotional response from your audience.

14, Read up online and look at other [lensball photography](#) experts. You'll get ideas for trying new subjects and most photographers are happy to share how they shot something.

#### 15. Post-Processing

Don't forget to process your images in lightroom or photoshop after you take your picture.

There are plenty of creative ways to process crystal ball photography, but you can try these for starters

##### Selective saturation

Desaturate the edges of the image and only leave colour inside the crystal ball.

##### Cropping

Do not underestimate the difference that a good crop can make. Use the crop tool to "get closer" to the crystal ball.

## Conclusion

If you don't have a Crystal Ball then a wineglass full of water can have a similar effect and it is on its own stand. You can even get an interesting double effect as I did with a very large wine glass part full of water being used as a stand for a lens ball. (When I say a large glass the glass holds a complete bottle of wine so you can relax after a day's hard photography)





I also have a prism when I get a chance there will be other pictures and effects that you can take.

## Other Ideas

Water and Oil have different refractive indexes and you can try photographing a coloured background through a glass dish and seeing the refraction caused along with bubbles of oil floating on water.



This image used a sheet of wrapping paper on the table with a Pyrex dish containing 25mm of water resting about 25mm above the paper, to get the light on the paper a strip of cheap white LED lights (£2 from the pound shop) was used, these are designed to be run from a USB power supply I used a rechargeable emergency phone charger and just laid these round the edge of the dish.

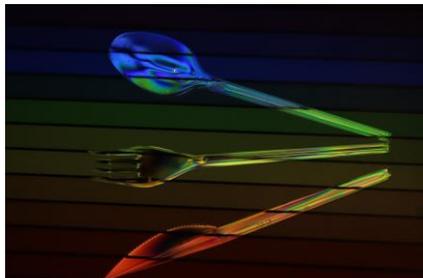
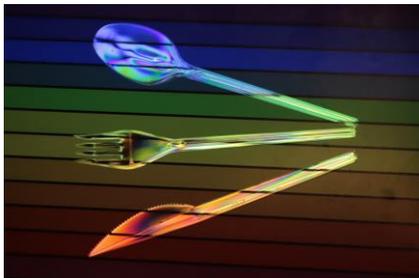
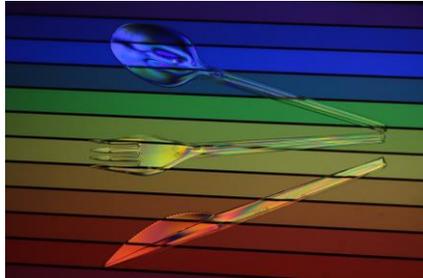
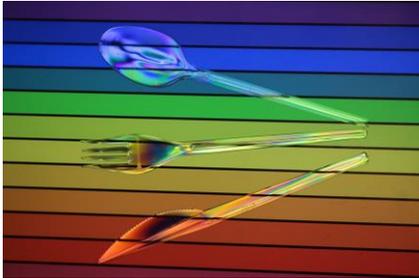
I was going to try this using Skittles, Smarties or M&M's on the table with the glass resting above to get random colours but on the day I got a packet of skittles I was too tempted to eat them.

## Playing with Polarised Light

The use of a polarising filter in landscape shots is well known for reducing reflections or enhancing skies, but it can also have an effect in doors when using a source of polarised light and clear plastic materials which will introduce reflections and refractions in the light path. In this case I used the screen of my laptop to provide a light source and rested clear plastic cutlery on the screen. The images were then taken of the screen and the Polarising Filter rotated, as the filter turned the light level from the screen varied (this is as the light from the laptop is polarised) and the colours in the cutlery changed, these could be enhanced using post processing. I then tried the same experiment with the laptop showing different backgrounds.



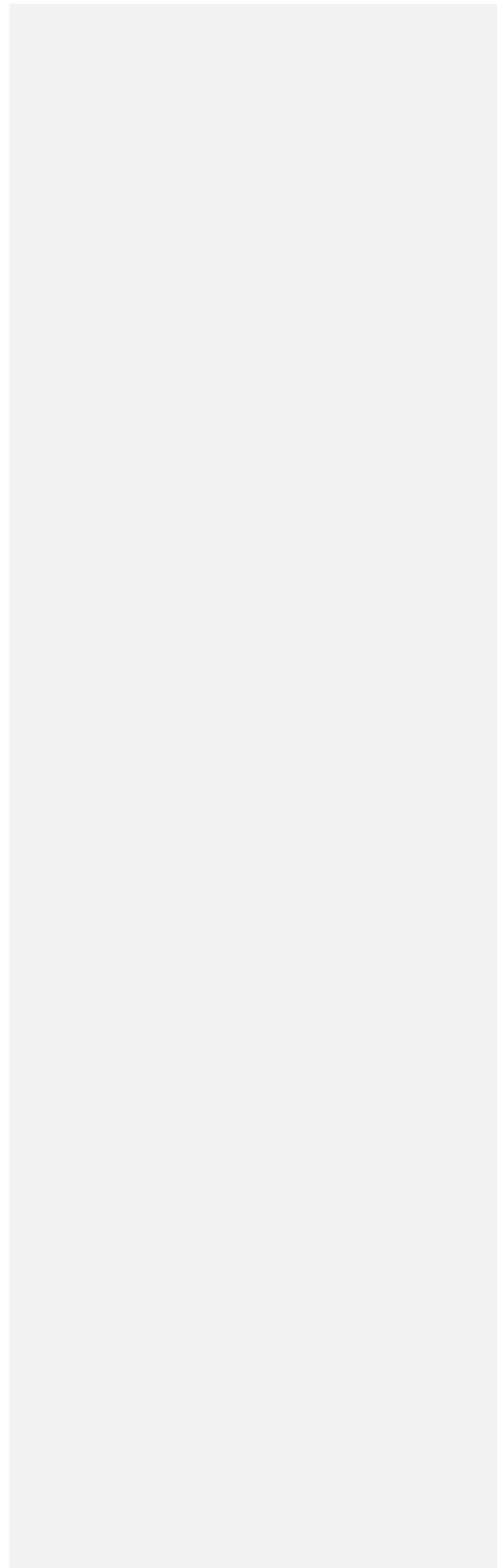
White background



Rainbow Background



Paisley Background





Psychedelic Background

I hope that these ideas might encourage people to experiment with refraction or also when they cannot do photography outdoors due to bad weather

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