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This image was done for the first project and is an underwater image looking above towards the surface. The intent was to capture the strange lighting effects that can be achieved by floating drops of olive oil on the surface of water and varying the light that passes over them. It creates an amazing stellar effect that when starting, I had no idea would be the case.

A very basic apparatus was used to produce this static, fluid image. A 24"x 12"x 8" clear, plastic bin was filled to a height of six inches of faucet water. One tablespoon of extra virgin olive oil was then poured onto the surface of the water, in the direct center of the plastic bin. It first sinks, but then floats to the surface of the water. An ordinary drinking straw was used to manipulate the olive oil into three different oil circles of varying dimensions. The circle in the lower left corner of the image has a diameter of approximately four cm. The circle in the lower right corner of the image has a diameter of approximately three cm. Last, the final circle towards the top of the image has a diameter of approximately 0.75 cm. The image was shot underwater, with the lens looking directly upwards.

There are two important fluid phenomena that can be seen in this image. First, it is significant how the olive oil floats on the surface of the water. This is because olive oil, whose density is 920 kg/m^3 at 20 degrees Celsius, has a lower density than water, whose density is 998 kg/m^3 at 20 degrees Celsius, and thus will float on top of the water. Also, it can be seen that when the olive oil is separated and its shape is altered, it always will return to a circular shape. When the oil is first poured into the water it forms spheres until it reaches the surface. This is because olive oil has hydrophobic ends that are scared to touch water, and will form micelles, circular spheres, to protect these ends that do not like to touch water. This causes the olive oil's circular and spherical shape.

The only fluids used were regular faucet water and extra virgin olive oil. No special visualization technique was used. The image was taken inside at a room temperature of approximately 20 degrees Celsius. A 60 watt light bulb in a flexible desk lamp was used for the lighting. It was positioned at the surface of the water, in the lower left corner of the image and was shone parallel over the surface.

There was no flash used when the image was captured. The size of the field of view from the top to the bottom of the image is five cm. Because the camera itself is one inch thick and was placed on the bottom of the water-filled bin, the distance from the object to the lens is five inches. The lens focal length used was 5 mm. The type of camera used was an Olympus Stylus Tough 8000 Digital 12 Mega Pixel. The final image has a width of 3968 pixels and a height of 2976 pixels. The aperture was 3.5, with a shutter speed of 1/10 second and an ISO setting of 100. The camera took the image in its Underwater Macro Mode and no manipulations were made to the image whatsoever.

The image reveals an awesome galactic effect taken from a very new and exciting underwater perspective. I really enjoy the way the light reflects off of the olive oil in different degrees of illumination to create such a "starry" effect. I believe the fluid physics are shown well and I fulfilled my intent. To further develop this idea I would

Jason Carranza
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like to take an underwater picture of the olive oil as it is first poured into to water and goes beneath the surface, forming many spherical solids called micelles. To do this I think I would need to rethink my lighting techniques and to use a much faster shutter speed on my camera.