



Figure 1 - L'Oréal Elvive Nutri-Gloss Shampoo

## Where is it used?

Pearlescent fluid is something that we have all seen in products that we buy everyday (*Figure 1*). It is added to shampoo, bubble bath and liquid soap to give them that luxurious, pearly iridescent look. Pearl Swirl™ fluid (PSW) is commercially available as a liquid concentrate pearly white suspension from Middlesex University Teaching Resources [1] and is an example of a *rheoscopic fluid*. It is non-flammable, unreactive and contains no toxic materials. See more on this on the Steve Spangler website in the US [2].

## Rheoscopic?

*Rheoscopic* comes from two Greek words, *rheo* meaning *flow* and *scope* meaning *to watch* and the fluid can be used to demonstrate flow patterns in liquids.

## How does it work and how can we use it in Science?

PSW is a suspension containing microscopic crystalline platelets. When PSW is in motion, the suspended platelets line up, with their larger dimensions parallel to the direction of flow of the moving liquid. On illumination, the moving platelets in different parts of the suspension reflect light in different directions, making the formation and movement of the currents visible. This is very useful for showing concepts which can be difficult to visualise such as ocean currents, aerodynamics, turbulence, convection and other motion effects. The solution can be kept and re-used. Here we have used it to demonstrate convection currents (*Figure 2*). Have a look at the movie on the online version of this SSERC Bulletin [3].



Figure 2 - As liquid is heated the pearlescent particles show convection currents

## SUPPLIER

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Code : 314-012  
Pearl Swirl Fluid  
£7.99 ex vat

## Equipment

Beaker, 600 cm<sup>3</sup>  
Measuring cylinder,  
500 cm<sup>3</sup> tripod and wire gauze  
Distilled water  
Pearl swirl concentrate  
Food colouring (optional)  
Dropping pipette  
Teaspoon, 5 cm<sup>3</sup>  
Heat resistant mat  
Bunsen burner

## Method

Measure 450 cm<sup>3</sup> distilled water into beaker.  
Add 1 teaspoon, 5 cm<sup>3</sup> of pearl swirl concentrate and stir to mix.  
Add 1 or 2 drops food colouring if required.  
Place the beaker on the tripod.  
Set up a Bunsen such that the flame is just heating one edge of the beaker.  
As the solution starts to warm up the suspension starts to flow (*Figure 2*). When the fluid on the side which is being heated by the Bunsen flame warms up you can see the direction of flow of the liquid in the beaker.

## References

- [1] - <http://www.mutr.co.uk/index.php>  
[2] - <http://www.stevespanglerscience.com/product/1218>  
[3] - [http://www.sserc.org.uk/members/SafetyNet/bulls/226/Pearl\\_Swirl.htm](http://www.sserc.org.uk/members/SafetyNet/bulls/226/Pearl_Swirl.htm)