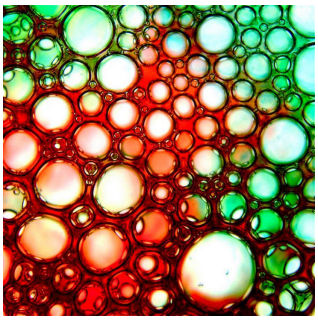
Topic	Metallic Bonding	Level	GCSE/A Level
Outcomes	1. To construct a model of a metallic lattice using bubbles 2. To use and evaluate the model to explain properties of metals		

A model of a metallic lattice



We are going to build on your understanding of the bonding and structure in a metal. You will build a model of a metallic lattice using bubbles and then **evaluate** how well this model helps explain the properties of metals. (This is based on a practical taken from Chemistry For You)

Method:

1. Half fill a Petri dish with a solution of water and fairy liquid
2. Using a syringe or plastic pipette, blow air into the solution to produce some small, regular shaped bubbles that completely cover the surface
3. Now use your model to answer the questions below

Questions:

1. In your book summarise the main parts of the model by drawing the apparatus and label the parts that represent the

   (i) metal cations
   (ii) sea of delocalised electrons
   (iii) the metallic bond

2. Use this model to explain the physical properties of metals:
   (i) good thermal conductors
   (ii) have high melting points

3. Take your finger and move it through the water. Did the bubbles lose contact with the water? Can you use this model to explain why metals are malleable?

4. Metallic bonds are non-directional. Can you use this model to explain that metallic bonds are non-directional?

5. What are the limitations of this model? Did it help you understand metallic bonding?

6. Make a list of all the factors that affect the strength of metallic bonds.

Progress: further resources on bonding are available here:
http://www.thescienceteacher.co.uk/bonding/