

Metamorphic rocks General

Cake

TE or D

To get students to think about the changes brought about by heating show the students a mixture of flour and currants (dough would be better but dough does not keep), and a piece of cake. Students are asked to list the changes that have taken place (chemical compounds, texture) and what has not changed (chemical composition). Cake and dough can also be used to discuss stability of compounds and temperature and why the cake and a metamorphic rock do not revert back to dough or sediments on cooling.

Description

A P F 5 min per sample

Students describe using technical terms, samples of metamorphic rocks. It is useful to provide students with a list of the terms they should use, a guide to describing the rocks and an example of a description.

Recrystallisation

D

About 15 balls of soft plasticine representing sand grains are put touching each other on a piece of wood 15cm by 10cm. These are shown to the group and then a second board is placed on top. A heavy student stands on the board and rocks slightly. The boards are pulled apart to show that the balls have been squeezed together to form a hexagonal pattern. Compare with the texture of samples of sandstone and metaquartzite.



Recrystallisation

D or P 2 min

Seven sponge rubber balls are arranged with one in the centre and the other six around it. Students squeeze the balls together. The central one becomes hexagonal and all the spaces between the balls disappear. It

is best if the balls are placed in a large tin lid. Beware even good students are tempted by a ball



Recrystallisation photo

D

A photo of a stack of round hay bales. The bottom ones will have become hexagonal and interlocking due to the pressure exerted by those above.

Recrystallisation as a solid

D

To show how recrystallisation can take place without melting. Make some ice in several colours using food dye. Break up the ice into small pieces of no more than 1cm long and mix all the colours up and place in a container such as a 3 litre ice cream container. This is shown to the students and they note the fragmental texture and porosity. A heavy weight, e.g. 25kg, is then put on top. The ice with the weight is then put in the freezer for a week. After which the ice will have recrystallised and all the pore spaces will have been eliminated and it will now have crystalline texture.