



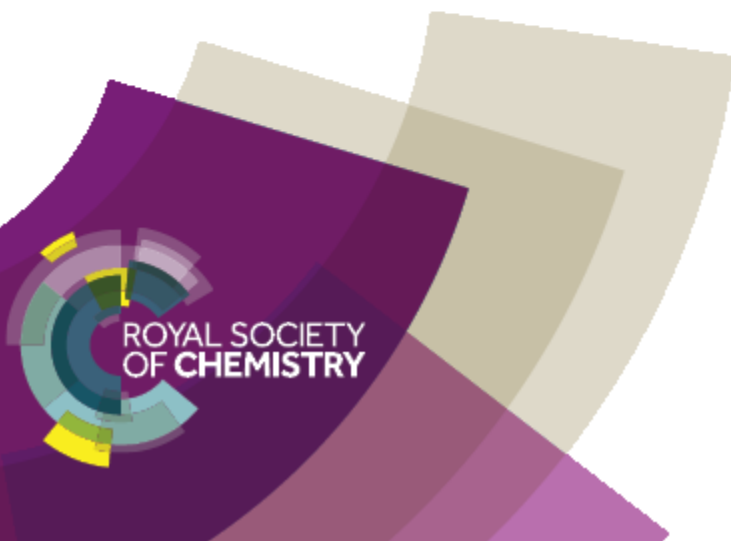
## Chemical analysis of Pompeian mosaic tiles

Read the full article at: [rsc.li/2Ufg4ll](https://rsc.li/2Ufg4ll)

Two mosaics from the Roman city of Pompeii have been analysed by scientists. They used portable spectrometers to show what the different coloured tiles are made of. The spectrometers used techniques that did not damage the tiles.



The black tiles were rich in metals such as aluminium, silicon, potassium and iron. Their composition was typical of volcanic rock, which may have come from nearby Vesuvius. The white, orange and red tiles were made mainly of calcite, a calcium carbonate mineral. The red and orange tiles also contained iron, suggesting they were coloured by adding a layer of a reddish iron oxide mineral over the calcite. The analysis identified some signs of damage in the white tiles. They detected calcium sulfate, which may have formed by the reaction of calcite with acidified rainwater.





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1. What are the advantages of using spectrometry techniques?
2. What property of iron oxide is typical of transition metal compounds?
3. Describe how acid rain forms.
4. Write a balanced equation for the reaction between calcium carbonate and sulfuric acid to produce calcium sulfate.