

## Fake your own ancient paper

### *Education in Chemistry*

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[rsc.li/2K6lu1K](https://rsc.li/2K6lu1K)

In this activity students use common household acids to carry out acid hydrolysis on paper, faking the ageing process. It can be used as a stand-alone lesson for 11–14 classes, or students can investigate how different factors affect the ageing process in class or in an enrichment session or science club.

### Teacher notes

In this activity we will use acid hydrolysis to fake our own aged paper. Students can read about how acid affects paper in the article. Lemon juice or vinegar will cause the paper to turn brown.

### Materials required

- A piece of paper (sugar paper is best)
- A spray bottle of lemon juice or vinegar
- A method of speeding up the hydrolysis
  - A heat source (hairdryer, heat gun, iron or sand tray on a heating mantle)
  - UV lamp
  - Washing line set up in sunlight

### Instructions

**Stand-alone activity:** Students should spray the paper thoroughly with the lemon juice and then use one of the methods listed to speed up the hydrolysis. To achieve results in a lesson using a heat source is recommended.

**Investigation:** Students can investigate how different factors affect the hydrolysis. These could include the identity of the acid used, concentration of the acid (with different concentrations achieved using systematic dilutions), method of increasing rate of hydrolysis (different heat sources, dark cupboard vs sunny windowsill)

### Additional activity ideas

This activity can also be used as a way of writing secret messages. Fill fountain pens with lemon juice and get students to write messages on the paper. These can then be visualised by the person receiving the note using the same methods listed above.

