Finding the best solvent for recrystallisation – teacher notes

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This open-ended activity focuses on choosing a suitable solvent for the recrystallisation of acetylsalicylic acid, developing student independence. It is ideal for preparing your post-16 students for their further studies, or as an adjunct to your lessons on recrystallisation.

The task

Students are provided with some key information about recrystallisation and a sample of crude acetylsalicylic acid. They should carry out a series of experiments to determine the best solvent or solvent mixture for recrystallisation. They should do this on a small scale using test tubes before carrying out the final recrystallisation on a larger sample, and take notes about the relative solubility at different temperatures as they go along.

Kit

Students will need access to samples of the following:

- acetylsalicylic acid, solid
- water
- ethyl acetate
- acetone
- ethanol
- methanol
- cyclohexane

They will also need access to:

- kettle
- beakers
- test tubes
- jewellery balance
- filter paper
- filter funnel
- conical flask

Health and safety

- Wear safety goggles.
- All organic solvents are flammable so no naked flames nearby.

Disposal

- Dispose of according to local guidelines.
- Use suitable waste containers. Do not pour down the sink.

Answer/expected results

Students should find the ethanol is the best solvent, as this conclusion can be reached in one lesson. However, it's best to prompt students to what is the criteria for best; for example, the size of crystals.