

Classic Chemistry Demonstrations: One Hundred Tried and Tested Experiments

By **Ted Lister**

Reviewed by **Tim Harrison, University of Bristol, UK**

The vast majority of chemists with whom I come into contact recall that the first experiences that excited them about chemistry were either seeing or doing practical work. It seems that the use of practical work at schools is decreasing; reasons include health and safety concerns and a lack of guidance. So I think it is time to review a classic textbook in this area: *Classic Chemistry Demonstrations: One Hundred Tried and Tested Experiments*, a book aimed at teachers which was given to every UK school when it was first published in 1995.

Many of the 100 demonstrations in this paperback are not original, but were nominated by experienced chemistry teachers from all over the world. The demonstrations, all of which have been thoroughly tested, afford students the opportunity to see experiments that they cannot do themselves for a myriad of reasons. It is important that students can see a “skilled practitioner at work” performing experiments that are “often spectacular, stimulating and motivating”. Naturally, chemistry demonstrations enhance teaching and learning and often provide a fun element to lessons.

For each demonstration, the author provides the topic for which the

demonstration may be relevant, the time to perform the demonstration (once set up), the appropriate age for the students, a description of the experiment and the apparatus, and the quantities of the chemicals needed.

Naturally the method (procedure) is given in sufficient detail to carry out the demonstration, as well as tips on teaching and visual tips, possible extensions to the work, and both simple and fuller details of the theory (where appropriate). Lastly, but by no means unimportantly, safety notes, although not a full risk assessment, are provided.

The full list of the 100 demonstrations may be found on the website of the UK’s Royal Society of Chemistry^{w1}, which also gives an example of one of the experiments: the ammonium dichromate volcano.

An additional ten reactions that are not included in the book (‘Chemistry demonstrations to enhance teaching and learning’) are available to download as Word or PDF files^{w2}. These reactions include that of sodium and potassium with concentrated hydrochloric acid, and the dehydration of N-(4-nitrophenyl)ethanamide by sulphuric acid.

Another useful guide to chemistry practical work by the Royal Society of

Chemistry is the Practical Chemistry website^{w3}. The Royal Society of Chemistry also provides teachers with readable notes on ‘Health and safety’, ‘Banned chemicals’ and ‘Chemicals not recommended for use in schools’^{w4}. Although these notes are written for UK schools and colleges, much of the advice applies to classrooms everywhere.

Details

Publisher: Royal Society of Chemistry
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Web references

- w1 – For the full list of the 100 demonstrations, see:
www.rsc.org/education/teachers/learnnet/pdf/LearnNet/rsc/classic_select.pdf
- w2 – Details of ten reactions not in the book (‘Chemistry demonstrations to enhance teaching and learning’) may be downloaded from the Royal Society of Chemistry website:
www.rsc.org/education/teachers/learnnet/cldemo_contents.htm
- w3 – The Royal Society of Chemistry’s Practical Chemistry website provides chemistry teachers with a wide range of experiments to

Why is science important? website

By Alom Shaha

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illustrate concepts or processes, as starting points for investigations and enhancement activities such as club or open-day events:

www.practicalchemistry.org

w4 – To download the teacher notes on safety, visit: www.rsc.org/education/teachers/learnnet/cldemo.htm



Why is science important?

- “It helps us find out what on Earth is going on.”
- “It can lay the groundwork for a great career.”
- “It is our best chance for tomorrow.”
- “It provides us with opportunities and choices.”

These and more statements can be found on Alom Shaha’s webpage, *Why is science important?* (<http://whyscience.co.uk>).

Alom Shaha is a British school teacher who collects videos and blogs from scientists, science writers and science teachers with their very personal answers to his question, “Why is science important?”

As a teacher, Alom wants to convey to his students “that science is something worth doing for reasons beyond the need to pass exams”. On his webpage, there are videos, blogs and a documentary film in which he visits scientists at their workplaces and asks them “why is science important?”. Viewers can watch Alom talk to scientists in places such as Antarctica or JET, the biggest fusion reactor in the world. (Note that the video clips can take a while to load; switching off the high-definition version can help.

There is a helpful note on the front page explaining how to do this.)

Maybe your next class could start with a short video of PhD student Rosie Coates showing what will happen if too much CO₂ enters our oceans. Watch Francisco Diego with his space rock, which is older than our planet. Ponder with Chris Langley about why we need more mp3 players, or listen to Mark Lythgoe describing the excitement of trotting on ground where no one else has ever been before. Read about how science allows partly deaf scientist Laura Goodall to lead the life she does.

The website might inspire teachers and students to contribute, or even to produce their own collection of statements to explain “Why is science important?”

