

Kitchen Chemistry

By Ted Lister and Heston Blumenthal

Reviewed by Tim Harrison, University of Bristol, UK

Why do some people find that their urine smells horribly after eating asparagus? Should green beans be cooked with the lid on or off? How hot are chilli peppers? What affects the colour and texture of cooked vegetables? These are a few of the questions that the *Kitchen Chemistry* book and CD-ROM aim to answer with a range of experiments and other activities.

As the front cover states, "This resource for schools and colleges demonstrates the role of chemistry in the kitchen and highlights the wide applicability of chemical principles." The back page continues: "Although not directly part of most [UK] school's curricula, this topic provides an exciting context for some familiar chemistry and a way to engage students with the topic." The book consists of class practicals, demonstrations, comprehension exercises and paper-based activities. The activities are presented as teachers' notes and student worksheets.

If selected carefully, food chemistry experiments can be conducted by students from primary to pre-university level. Indeed, a helpful index categorises the *Kitchen Chemistry* activities by age: 5-11, 11-16 and post-16 (pre-university). Most topics are for post-16 students but even these could be used for younger, more able students, particularly if they were adapted accordingly. Each topic describes the learning objectives, targeted age group, approximate timings, a description, teaching notes and details of the student activities. Notes on the risk assessments for food

experiments, and for the handling of liquid nitrogen in the chapter on making ice-cream, are also included.

There are three activities aimed specifically at younger students. These include investigating several of the variables that affect how jelly sets in contact with fresh fruit, as well as ice-cream making. For 11- to 16-year-olds, there are several experiments investigating salt and the use of salt in cooking. The post-16 activities make use of skeleton formulae of compounds and high-pressure liquid chromatography (HPLC) chromatograms. Experiments include the titration of sodium chloride solutions to see if vegetables absorb salt when cooked, and the chemistry of baking powder. Other exercises examine the structure of ice and water, the chemistry of flavour and why pans stick.

A CD-ROM, to be used alongside the book, lists resources by book chapter. These resources include the worksheets (as Microsoft Word® documents or PDF files in colour or black and white), a presentation on salt, some rotatable Chime structures of ice, and links to 16 video clips that can be downloaded from the Internet. To view the video clips, a PC must be connected to the Internet. The clips, featuring Heston Blumenthal from the Discovery Channel TV series 'Kitchen Chemistry', are available in three formats:

- 2MB Windows Media Video (wmv)
- 15MB Windows Media Video
- 35MB MPEG.

Adobe Acrobat Reader and Chime plug-ins are available on the CD-ROM. (Chime is needed to visualise

the 3D structures of molecules.)

Ted Lister has written several publications for the Royal Society of Chemistry. Heston Blumenthal is one of the UK's top chefs whose restaurant, The Fat Duck, has the distinction of three Michelin stars. It was also voted the best restaurant in the world in April 2005. Heston is noted for his scientific approach to cooking.

Resources

Teachers who wish to see the worksheets before purchasing this resource may download them from www.chemsoc.org/kitchenchemistry.

For more information on activities of The Royal Society of Chemistry, including those designed for students, see: www.rsc.org

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Ordering

The resource can be ordered from the Royal Society of Chemistry:
www.rsc.org

