

## February 2017 chemistry wordoku

S			V		O	M			A
		M		E			R		E
			R				L	E	I
	M			A		R			L
E									M
		A		M			E		O
A	E				L				R
	O			R		V			S
		L	O		A				V

Solve this wordoku in the same way as a sudoku with letters instead of numbers (each of the nine letters in each row, column and nine-square cell). Once solved, one of the overall diagonals can be rearranged into the name of an early chemist

## February 2017 word grid

N	U	C
C	Es	Ra
I	Ac	I

**Prize entry:** Using each element symbol in the grid only once, combine them together to make a single word of 12 letters.

Word.....

**Just for fun:** Construct as many other words as you can using a minimum of three symbols, and each symbol only once.

6 words: OK  
9 words: Good  
12+ words: Excellent

## Entry form

There are four prize puzzles on this page: crossword (cryptic answers only); wordoku; molecule search; and word grid. For each puzzle, a winner will be selected from all the correct entries received and awarded a £25 book voucher. You can only win one of the individual puzzle prizes each month.

If you submit correct entries for all four prize puzzles you will also be entered into a draw to win this month's grand prize\* provided by RSSL:

**Gold Level Membership (1 Jan 17 to 31 Dec 17) - Emergency Response Service.** Find out more at [rsc.li/CWpuzzles](http://rsc.li/CWpuzzles)

Please enter your details below and either post or email this page with your completed entries to us by **20 February 2017**.

Chemistry World puzzles, Royal Society of Chemistry, Science Park, Milton Road, Cambridge, CB4 0WF, UK  
email [chemistryworld@rsc.org](mailto:chemistryworld@rsc.org)

Name .....

Email .....

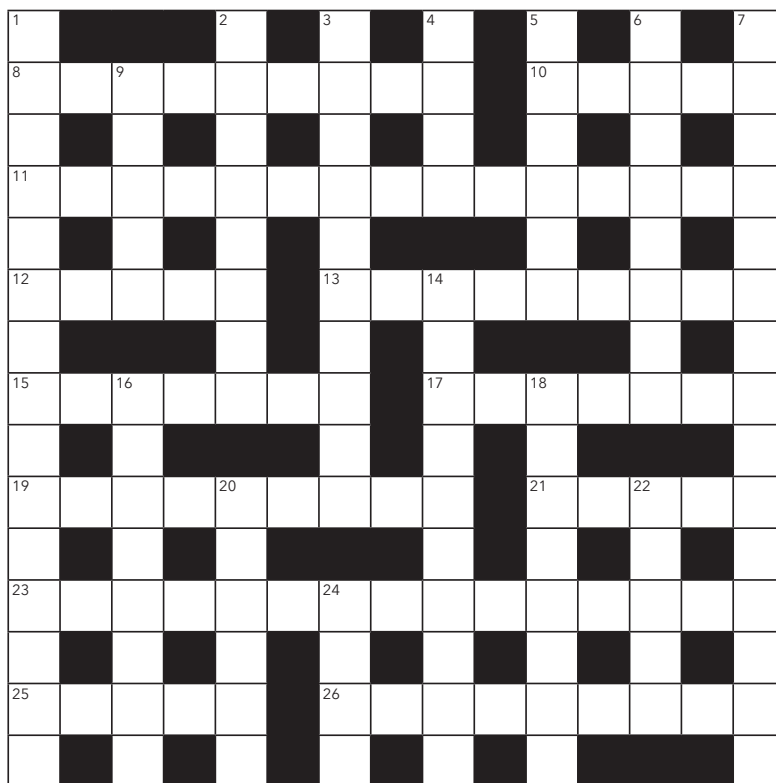
Tel .....

Participants are advised that any personal information supplied will be processed in connection with this competition and only in accordance with our privacy statement ([www.chemistryworld.com/privacy](http://www.chemistryworld.com/privacy)). In order to claim the grand prize, the winner's personal information will be provided to RSSL.

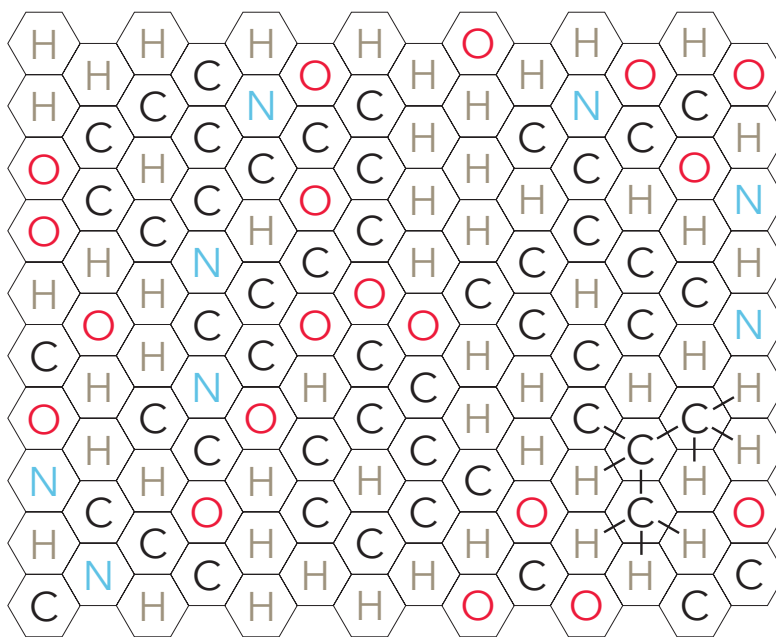
\* Limit of one entry per person before the closing date specified. The winner will be randomly selected and will be contacted directly by RSSL. There is no cash alternative to the winning prize.

RSSL may wish to contact you via email with further information about products and services. Please tick the box if you would like to be contacted by RSSL via email and consent to us sharing your contact details with RSSL for this purpose

## February 2017 crossword



## February 2017 molecule search



Connect atoms in adjacent cells using single or multiple bonds to reveal the hidden molecules. The hexagonal grid necessitates some minor distortion of bond angles - for example in one of the methyl groups drawn in as a starting point.

Find these three molecules - we've already started one of them for you.  
 $C_{13}H_{18}O_2$        $C_8H_9NO_2$        $C_9H_8O_4$

Clues: Two of the molecules contain carboxylic acids; one includes an amide; one includes an ester.

**Cryptic (prize entry)**

- Across**
- You ring around love, left with wee study (9)
  - Leaving Italy, reacts negatively to desert (5)
  - Bright red, endure severe injury (5-6, 4)
  - I can leave magicians to conjure Greek letter (5)
  - Old element from an amiable misunderstanding? (9)
  - Two lads confused chemist (7)
  - Row about Serb surfer (7)
  - Endless hunt around North Malta finds metal (9)
  - Gaelic choir is hidden inside (5)
  - Cross about name repetition? What a trial! (15)
  - Gent leaves Gottingen, turning to bar (5)
  - Head chef right into French water - turned to liqueur! (9)

**Quick (just for fun)**

- Across**
- Self-centred (9)
  - Bird waste (5)
  - Salt (7, 8)
  - Asian pear (5)
  - Sickness (3, 6)
  - American chemist (7)
  - Purifier (7)
  - Twin-hulled watercraft (9)
  - Small civet (5)
  - Tree cultivator (15)
  - Histology dye (5)
  - Fluorescent dye (9)

**Down**

- Chemist souls jiving around Tube (6, 3, 6)
- Right away, Dana wrong about ancient supercontinent (8)
- Deer groans about suburban utopia? (4, 6)
- Colourist mixes red with final flurry (4)
- Galena compound for girl (6)
- Rodents go around a suite (8)
- Doctor unearths ravines for Swedish scientist (6, 9)
- Mix gin cocktail initially-topping! (5)
- Proteinaceous lad transmutes niobium (10)
- Gent's pet mauled camping gear (4, 4)
- Cross about toads in reagents? (8)
- Blocks shorts surprisingly (6)
- Dim idea hiding nitrogenous compound (5)
- Amicably including mineral (4)

**Down**

- Elemental classification named after English chemist (8, 7)
- Man of Manila (8)
- Candied root (4, 6)
- Corticotropin (4)
- Take no notice of (6)
- Flavouring agent,  $C_8H_{10}O_3$  (8)
- English chemist (6, 9)
- Sworn statements (5)
- Vice Admiral of Trafalgar fame (4, 6)
- Disulfiram (8)
- $E = mc^2$  and  $PV = nRT$  for example (8)
- Sheep breed (6)
- Futuristic story genre (3-2)
- Fish (4)

Many haulage companies train and equip their drivers to deal with situations like these. The leaking barrel can be temporarily stopped by rolling the drum over so the puncture is at the top. The leaking barrel can then be sealed in a salvage over drum, which safely encloses the entire barrel. However, a spill of acid onto the carriageway is a serious event and the emergency services need to be notified immediately. Failure to do this can be expensive! The HSE has previously imposed fines of £20,000 on companies that have failed to act responsibly.

**Answer to On the spot**

**On the spot: Sulfuric acid spill**
**ATA BUSY LAY BY..**

A DRIVER PARKED ON A DUAL CARRIAGEWAY HAS REPORTED A LEAK FROM FOUR 250 LITRE DRUMS OF SULFURIC ACID IN HIS TRUCK.

AROUND 35-40 LITRES HAVE ALREADY BEEN SPILLED. IT APPEARS ONE OF THE DRUMS HAS BEEN PIERCED BY A NAIL.

THE TRUCK IS ABLE TO DRIVE AND ALL ITS PAPERWORK IS IN ORDER. THERE ARE SOME OTHER CHEMICALS ON BOARD AS WELL AS SOME PAINT SUPPLIES. THE WEATHER IS SUNNY BUT COLD. THE DRIVER IS WITH THE VEHICLE.

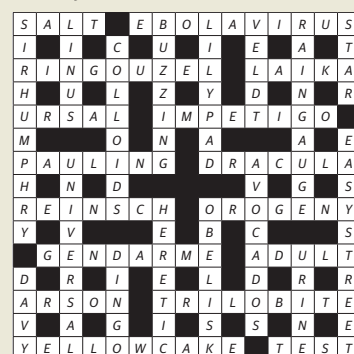
**WHAT WOULD YOU DO?..**

**Scientific Services for the Food Industry**

- Allergen Testing
- Functional Ingredient Analysis
- Flavour and Aroma Profiling
- Product Development
- Method Development and Validation
- Investigative Analysis
- 24/7 Emergency Response Service
- Stability Studies
- In-house Training
- Consultancy

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Web: [www.rssl.com](http://www.rssl.com)


**January 2017 solutions and winners**
**Cryptic (prize entry)**

**Quick (just for fun)**

**Wordoku**

The name of the new element was OGANESSON

**Word grid**

The nine-symbol word was FUNCTIONALISM

**January winners**

Molecule search and overall winner: M Arrowsmith, Würzburg, Germany

**Wordoku**

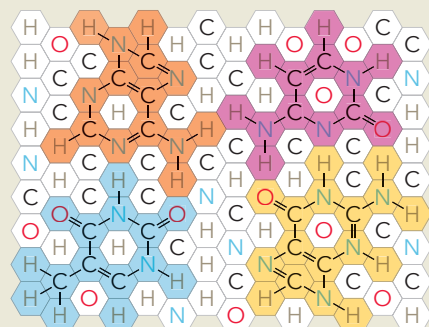
D Harbron, Aldermaston, UK

**Word grid**

K Verrall, Gloucestershire, UK

**Crossword**

A Pugh

**Molecule search**


The four molecules are the DNA bases adenine, thymine, guanine and cytosine. Alternative tautomers are acceptable