

June 2017 chemistry wordoku

		H								A
R	W		E							E
		O	T		N	H	R	A		H
				N		T		E		N
	A	T				S	H			O
E		S		O						R
A	S	N	H		W	E				S
					E		N	T		T
					W					W

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

June 2017 word grid

Ra	H	Sm
C	P	Og
I	I	Se

Prize entry: Using each element symbol in the grid only once, combine them together to make a single word of 13 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 enter any or all of the prize draws, but each entrant is only eligible to win one of the individual puzzle prizes each month.

Please enter your details below and either post or email this page with your completed entries to us by **20 June 2017**. The winners of this month's puzzles will be published in the July 2017 issue, along with the solutions.

Chemistry World puzzles, Royal Society of Chemistry,
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Name

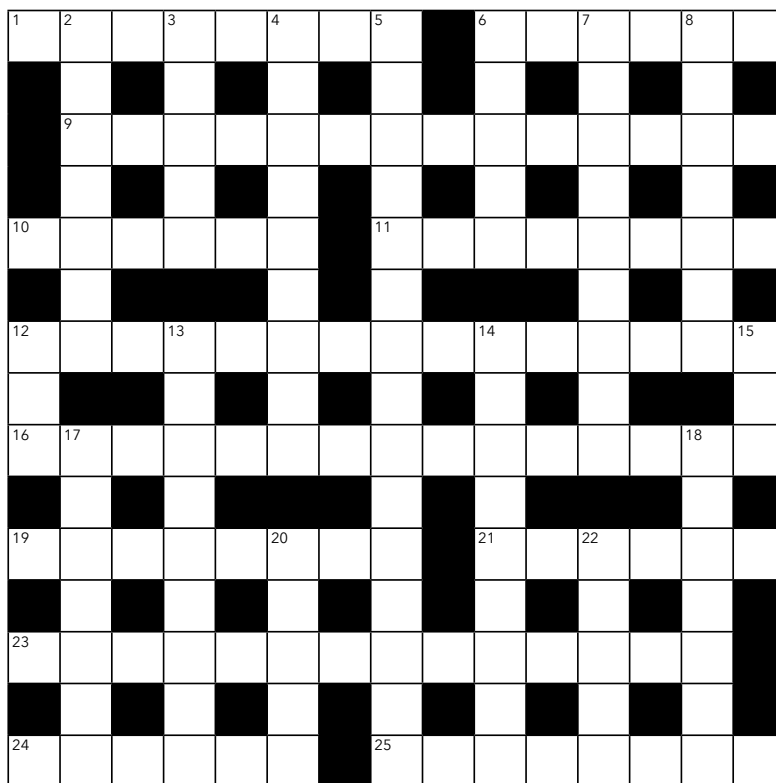
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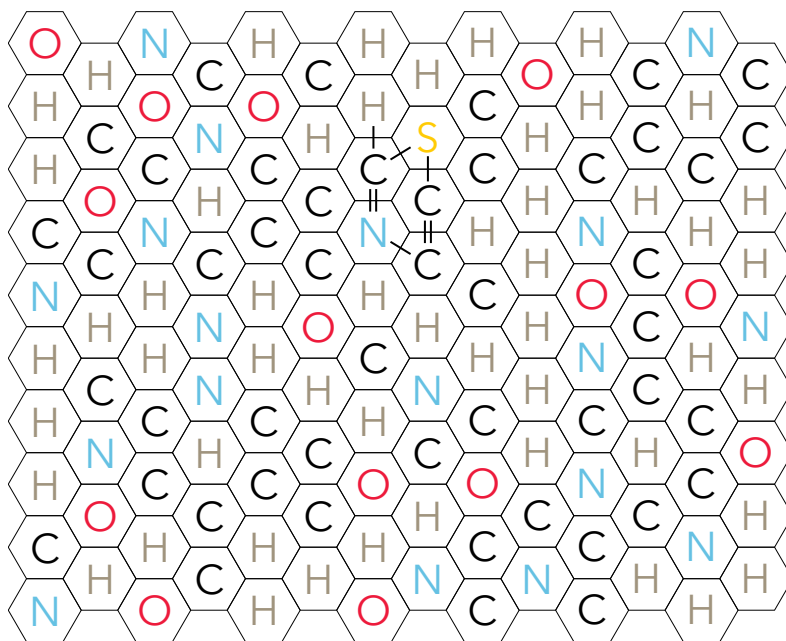
Participants are advised that any personal information supplied will be processed in connection with this competition and only in accordance with our privacy statement (www.chemistryworld.com/privacy).

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June 2017 crossword



June 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 the five-membered ring drawn in as a starting point.

Find these three molecules - we've already started one of them for you.
 $C_8H_{11}NO_2$ $C_6H_5NO_2$ $C_{12}H_{17}N_4O_4S^+$

Clues: All three molecules include nitrogen-containing heterocycles. One has a primary amine. Two include hydroxyls. One has a carboxylic acid group.

Cryptic (prize entry)
Across

- 1 Biochemist takes cone from northern Co-op (8)
- 6 Painter with upsetting traits? (6)
- 9 Old vet's hell around her breaking point? (9, 5)
- 10 Cleric who moves diagonally? (6)
- 11 Energy? Ah, plenty around! (8)
- 12 Chemist observed herd got confused (7, 8)
- 16 Physicist converts bard's useful room (6, 9)
- 19 Curve around a polar lab (8)
- 21 Fido returns in my reform (6)
- 23 Right away, ironic if italics create petrification (14)
- 24 Left out upsetting seminal compounds (6)
- 25 Tinny call - about time! (8)

Quick (just for fun)
Across

- 1 Candy on a stick (8)
- 6 Township of Johannesburg (6)
- 9 Solenoids for instance (14)
- 10 Unbleached cotton fabric (6)
- 11 Epoch of the Neogene Period (8)
- 12 Italian polymath (8, 2, 5)
- 16 Russian pioneer of the Periodic Table (6, 9)
- 19 Concerning a classical Greek philosopher (8)
- 21 Turn into bone (6)
- 23 American physicist and Nobel laureate (in 1977) (6, 8)
- 24 Biological catalyst (6)
- 25 Concerning change in sea level (8)

Down

- 2 3 down is about a big bird (7)
- 3 Chortle about the French leaving light (5)
- 4 Galvanized four playing sport (9)
- 5 Sponsor families' surprising skill (15)
- 6 Check German car before final MOT (5)
- 7 Magi bathe around African country (3, 6)
- 8 Snoozer under the train (7)
- 12 Rat returns to sticky stuff (3)
- 13 Notion about azo compound treatment? (9)
- 14 Muddled male posts mineral (5, 4)
- 15 Initially guard against rotten fish (3)
- 17 Metal armour I oddly run around (7)
- 18 Without love, offend, that is, upset master! (7)
- 20 Duck mist around leaves (5)
- 22 Bore with discipline? (5)

Down

- 2 Perform surgery (7)
- 3 German-born pharmacologist who discovered acetylcholine (5)
- 4 Mixture of dried petals and spices for perfuming a room (9)
- 5 Type of photoluminescence (15)
- 6 Yogi (5)
- 7 Perceived decrease in air temperature due to flow of air (9)
- 8 Passenger liner that sank in 1912 (7)
- 12 Cover (3)
- 13 Not artificially (9)
- 14 Compounds like testosterone (9)
- 15 Polio vaccine (abbreviation) (3)
- 17 Gallinula chloropus (7)
- 18 Title of respect in Eastern Mediterranean (7)
- 20 Cone-shaped tent (5)
- 22 Welsh DJ (born Alexander Paul Coe) (5)

Answer to On the spot
 The orange fumes are likely to be a nitrogen oxide gases from nitric acid. NO₂ fumes are toxic and corrosive. The immediate priority would be to evacuate any nearby pedestrians, as cars and buildings will offer temporary protections to their occupants. A wider evacuation of buildings might be necessary if the gas release can't be brought under control quickly. Covering any acid spillage in sand will reduce the evolution of fumes. Alternatively, a spray of water from a fire hose can knock down the gas. This will protect the public but create a pool of acidified fire water, which could leak to the watercourse. Moving the leaking vehicle is an alternative, however, this risks spreading the plume of gas further and worsening the situation.
 Tom Baker is a senior responder at the National Chemical Emergency Centre

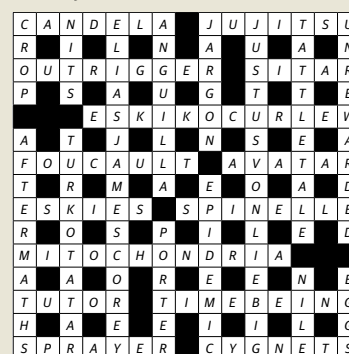
On the spot: Fuming lorry

Fats and Oils Analysis
In Raw materials and Finished Products

- Fatty acid profiling
- Claim substantiation - plant stanols, sterols, omega 3 and 6 and more...
- Fat stability and degradation issues
- Stability storage and accelerated testing
- Product development, reformulation and optimisation
- Matrix-specific method development
- Off flavour identification
- Authenticity of oils

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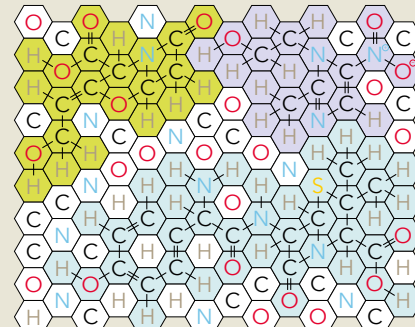

May 2017 solutions and winners
Cryptic (prize entry)

Quick (just for fun)

Wordoku

The name of the amino acid was THREONINE

Word grid

The nine-symbol word was PRECIPITATES

Molecule search


The three molecules are antibiotics metronidazole and amoxicillin, and clavulanic acid, which overcomes bacterial resistance to β -lactam drugs.

May winners
Molecule search

Alan Tucker, Bristol, UK

Word grid

Anne Owen, Leeds, UK

Crossword

Rob Hollingworth, London, UK