

July 2017 chemistry wordoku

		U			H	E		T	E
R			E					H	M
				U	G				H
O	H					M			M
	S			O				T	O
		R						S	E
			R	M					S
M	G				S				T
U		O	H			T			U

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 German chemist most associated with electrolysis

July 2017 word grid

As	Ti	O
Na	Cr	Ti
N	O	Pr

Prize entry: Using each element symbol in the grid only once, combine them together to make a single word of 15 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 July 2017**. The winners of this month's puzzles will be published in the August 2017 issue, along with the solutions.

Chemistry World puzzles, Royal Society of Chemistry,
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Cambridge, CB4 0WF, UK
Email: chemistryworld@rsc.org

Name

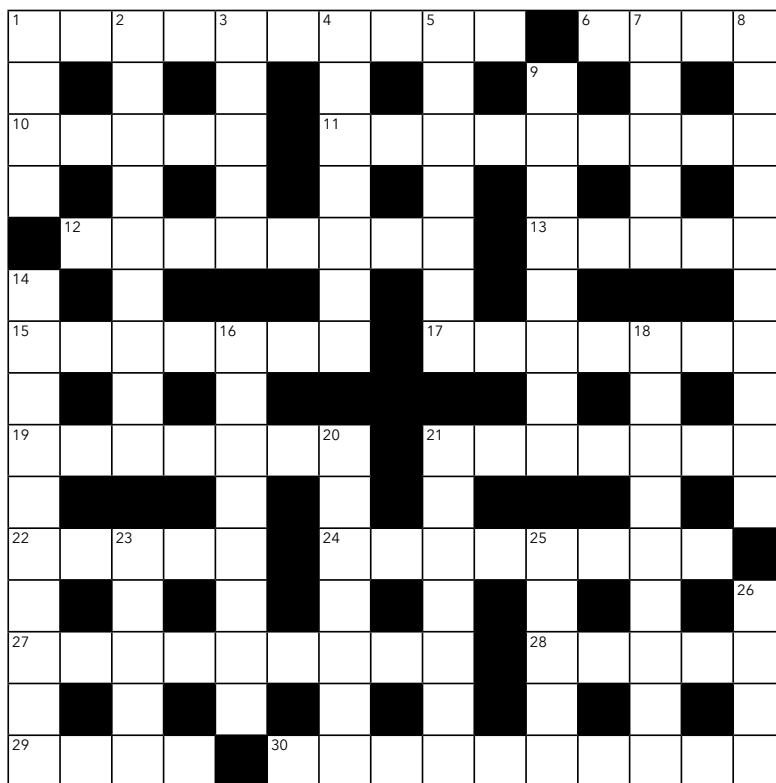
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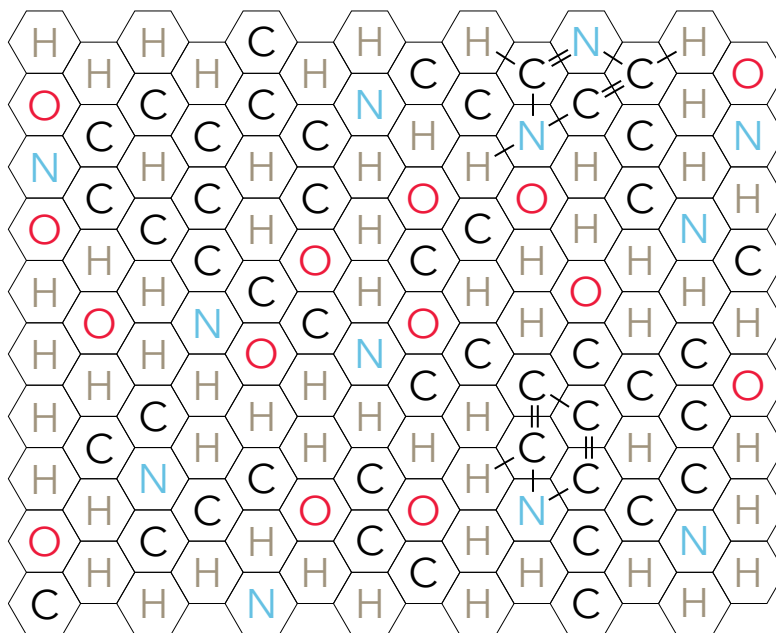
Participants are advised that any personal information supplied will be processed in connection with this competition and only in accordance with our privacy statement (www.chemistryworld.com/privacy).

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July 2017 crossword

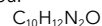


July 2017 molecule search



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 the five membered rings drawn in as a starting points.

Find these four molecules - we've already started two of them for you.



Clues: All four molecules have amines, one of which is quaternary. Two of the molecules contain five-membered rings; one contains an ester.

Cryptic (prize entry)

- Across**
- 1 Argues about cans containing carbohydrates (4, 6)
 - 6, 16 down Pill pioneer sad about Raj relics (4, 8)
 - 10 Latin father confused in ancient city (5)
 - 11 Initially Mum knits Bob crazy choker (5, 4)
 - 12 Brief mob about Molotov Cocktail (4, 4)
 - 13 Oddly Gill leaves gambler for Elektra (5)
 - 15 His road around the beehives (7)
 - 17, 26 down Own our right to metal (7, 4)
 - 19 Ray prepares mung beans without heartless nag (7)
 - 21 Genuine fish pigment (7)
 - 22 Carnivore confuses extremely antsy hen (5)
 - 24 Lock star turn in the cellar? (4, 4)
 - 27 Head teacher darts around mad German city (9)
 - 28 Alchemist transmutes Eastern gibberish without his bismuth (5)
 - 29 Totters oddly, returning home (4)
 - 30 Cross about no routine - it's poison! (10)

Quick (just for fun)

- Across**
- 1 Fungus scientist (10)
 - 6 Not near (4)
 - 10 Apple acid (5)
 - 11 Quinoline (9)
 - 12 See 9 down (8)
 - 13 Ring ouzel (5)
 - 15 In fact, whether by right or not (2, 5)
 - 17 Party hid sign (anag) (7)
 - 19, 21 down English physicist and chemist (7, 7)
 - 21 Felt hats (7)
 - 22 See 7 down (5)
 - 24, 26 down E334 (8, 4)
 - 27 Musical instrument combining organ tones and various other instruments (9)
 - 28 Artery originating from the abdominal aorta (5)
 - 29 Finishes (4)
 - 30 Mole salamander (10)

Down

- 1 Return brief specifications for penny buns (4)
- 2 I turn right nut into dietetics (9)
- 3 See 21 down (5)
- 4 Windy sages upset Open University (7)
- 5 Artificial intelligence transforms brown into many colours (7)
- 7 First half bamboozled about this nuclear weapon (1-4)
- 8 Speaking after short labour in testing room (10)
- 9 Even smooth koala confused by State (8)
- 14 Shopped around his compounds (10)
- 16 See 6 across (8)
- 18 Being extremely cross about Google TV? (9)
- 20 I upset mature old salt (7)
- 21, 3 down Clear richest shaken by magnitude of earthquake (7, 5)
- 23 Regret decapitated bird (5)
- 25 First night away, things upset vision (5)
- 26 See 17 across (4)

Down

- 1 Neologism coined by Richard Dawkins (4)
- 2 Relating to food or fuel energy (9)
- 3 Disappearing Lord (5)
- 4 Italian polymath (7)
- 5 Genus of starlings (7)
- 7, 22 across German chemist (5, 5)
- 8 Someone who studies the flow and deformation of matter (10)
- 9, 12 across English chemist and contributor to understanding of DNA structure (8, 7)
- 14 Dutch dairy product (4, 6)
- 16 Online conversation space (4, 4)
- 18 Theory of evolution (9)
- 20 Alkali metal (7)
- 21 See 19 across (7)
- 23 Two-legged creature (5)
- 25 At an angle (5)
- 26 See 24 Across (4)

Answer to On the spot

Ammonium nitrate is indeed explosive, but only in certain circumstances. Several large incidents have resulted from fires around ammonium nitrate where circumstances have led to detonation, such as in Oppau, Germany, 1921, or in West, US, 2013. However, these examples were not simply fires that caused the detonation. A fire near fertilisers will not cause detonation unless the stack is contained suitably confined in order for confinement to occur, typically the fertiliser will melt and then solidify in a confined area such as pipe or drain. This can lead to detonation, as can contamination with organic material such as straw, grease or oil. Otherwise, keeping the stack damp and out of the fire will be sufficient to reduce the detonation risk, fighting from a protected position with remote monitors will reduce the risk to fire fighters.

Tom Baker is a senior responder at the National Chemical Emergency Centre

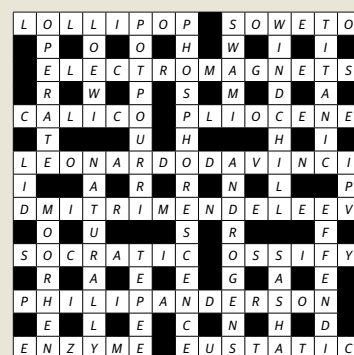
On the spot: Farm fire

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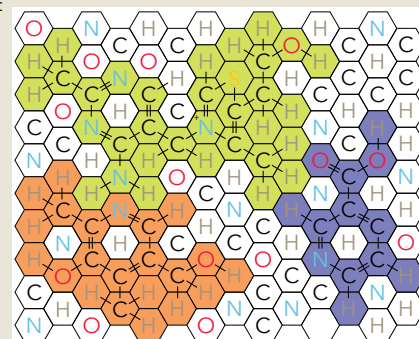

June 2017 solutions and winners
Cryptic (prize entry)

Quick (just for fun)

Wordoku

The name of the inorganic chemist was M Frederick HAWTHORNE

Word grid

The nine-symbol word was SEISMOGRAPHIC

Molecule search

June winners
Molecule search

Valerio Fasano, Manchester, UK

Wordoku

Bill Neville, London, UK

Word grid

Mark Nichols, Rugby, UK

Crossword

John Coster, Saffron Walden, UK

The molecules are the vitamins thiamine (B₁) and niacin (B₃), alongside the vitamin B₆ antagonist 4-deoxyipyridoxine.