

## **UNESCO** celebrates 150 years of chemistry's periodic table

January 30 2019

| pe 1                |  |                         |  |                                    |                            |                            |                        |                                    |                        |                      |  |   |   |   |                              |   | 18   |
|---------------------|--|-------------------------|--|------------------------------------|----------------------------|----------------------------|------------------------|------------------------------------|------------------------|----------------------|--|---|---|---|------------------------------|---|--|
| <sup>794</sup> 2.30 |  | ou nombre de            | Masse atomique<br>e masse le plus stal | $\frac{10}{100} - 55,8$            | 845                        | 26 - Num                   | iéro atomique          | Métau                              | x alcalins             | Métallo              | ides                                     |   |   |   |                              |   | 4,002602<br>202,3  |
|                     |  |                         | gie d'ionisatio                        | on                                 | 1,83                       | - Elec                     | tronégativité          | Métau                              | x                      | Non-me               | taux                                     |   |   |   |                              |   | He   |
| rogène              | 2  |                         | en kJ/n                                | nol T.                             | ٦                          | +6 au sen<br>+5            | is de Pauling          |                                    | io-terreux<br>s métaux | Halogèr              |  | 13  | 14  | 15  | 16                           | 17  | Hélium   |
| 3                   | 9.012182 /   | 2 A Symbole chim        |  | ue — 🛏                             | - Fe 🚯                     |                            | - États d'oxydation    |                                    | Métaux de transition   |                      | Gaz nobles                               |   | 12,0107 6                                       | 14.0067 7   | 15.9994 8                    | 18,998403 Q   | 20,1797 1  |
| 0.58                | Be   |                         |  |                                    |                            | +2 Lod                     |                        |                                    |                        |                      | Éléments inconnus                        |   | 1086.5 2.55                                     | 1802.3 3.04<br>N                                  | 1313.9 3,44                  | E 1081.0 1.08   | Ne   |
| 1                   | DC<br>Béryllium  | No                      |  | " rer                              |                            | -1                         |                        |                                    | Actinides              |                      | <ul> <li>Éléments radioactifs</li> </ul> |   | Carbone   | Azote   | Oxygène                      | Eluor   | LIC<br>Néon  |
|                     | 10.20  | comgutation electroniqu |  | $e \longrightarrow [Ar] 3d^6 4s^2$ |                            |                            |                        |                                    | Acunides               |                      | T Elements radioactils                   |   | 1s <sup>1</sup> 2s <sup>2</sup> 2p <sup>2</sup> | 1 147 247 207                                     | 1 16 28 20                   | 1.0 20 20   | 10.20.20   |
| 8976 11<br>0.95 11  | 24,0000 12<br>25 Lin 12<br>26,0813 13<br>28,0835 14<br>28,0853 14<br>28,0854 14 28,0854 14<br>28,0854 14 28,0854 14<br>28,0854 |                         |  |                                    |                            |                            |                        |                                    |                        |                      |  |   | 39,948 1.                                       |   |                              |   |  |
| a '                 | Mg *   |                         |  |                                    |                            |                            |                        |                                    |                        |                      |  | Al "  | S1  | P   | S                            | CI  | Ar   |
| um                  | Magnesium<br>Nel 34  | 3                       | 4                                      | 5                                  | 6                          | 7                          | 8                      | 9                                  | 10                     | 11                   | 12                                       | Aluminium<br>Nel 3s <sup>2</sup> 3p <sup>2</sup>                | Silicium<br>Ne 36 <sup>3</sup> 3p <sup>2</sup>  | Phosphore<br>[Nr] 36 <sup>3</sup> 30 <sup>3</sup> | Soufre<br>Net 30' 30'        | Chlore  | Argon  |
| <sup>83</sup>       | 40,078 20  | 44,95591 21             | 47,867 22                              | 50,9415 23                         | 51,9962 24                 | 54,93804 25                | 55,845 26              | 58,93319 2                         | 7 58,6934 28           | 63,546 29            | 65,38<br>906,4 1.65 30                   | 69,723 31   | 72,64 32  | 74,92160 33                                       | 78,96 2.55 34                | 79,904 35   | 83,798 300 3   |
| -                   | Ca   | Sc                      | Ti                                     | V                                  | Cr                         | Mn                         | Fe                     | Co                                 | Ni                     | Cu                   | Zn                                       | Ga  | Ge  | As  | Se                           | Br  | Kr   |
| ssium               | Calcium  | Seandium                | Titane                                 | Vanadium                           | Chrome                     | 2<br>Manganèse             | Fer                    | Cobalt                             | Nickel                 | Cuivre               | Zinc                                     | Gallium   | Germanium                                       | Arsenic   | Sélénium                     | Brome   | Krypton  |
| 28 27               | 10 ω<br>87,62 <u>38</u>  | 88,90585 39             | 91.224 40                              | 92,90638 41                        | 95,96 42                   | 2 Ar 34 61                 | 101.07 44              | 102,9055 4                         | 5 106.42 46            | 107,8682 47          | 112,441 48<br>80.8 1.00                  | 114,818 49  | 118,710 50                                      | Ar 3d* 62 ipt<br>121.760 51                       | (Ar) 3d*67.4p1<br>127.60 5.9 | 126,9044 53   | 131,293 5  |
| 0.82                |  | V 3                     | 620,1 1,13                             | NTL                                | 681,3 2,16                 | 6 502.0 1.90 °FO           | 7 710.2 2.20           |                                    | 801.1 2.30             | 511,0 1,93           | CI 2                                     | 558.3 1.58  | C 136   | CT .  |                              | 1008.1 206 J.J.   | 1120,4 2,00  |
| D                   | $\mathbf{Sr}^{-2}$   | Υ <sup>a</sup>          | Lr i                                   | IND                                | Mo                         | Tc                         | Ru                     | Rh                                 | Pd                     | Ag                   | Ca                                       | In a  | Sn  | Sb  | le                           | 1   | Ле   |
| idium               | Strontium<br>Ke 56   | Yttrium<br>Kej 64°52    | Zirconium<br>Kr 64°54                  | Niobium<br>(Kr) 60°56°             | Molybdène<br> Kr/4P5st     | 1 Technétium<br>2 Kr 44°54 | Ruthénium<br>3ke 66 5e | Rhodium<br>(Kr) 6P 5s <sup>1</sup> | H Palladium            | Argent<br>(Ke) 64%56 | Cadmium<br>(Kr: 60° 542                  | Indium<br>(Kr) 4d <sup>ar</sup> 5a <sup>2</sup> 5p <sup>2</sup> | Étain<br>Kri 40° 54° 5p²                        | Antimoine<br>3kr/3d#5a25p2                        | Tellure<br>(kr) 64* 5st 5pt  | lode<br>36r/3d*5r5p   | Xénon<br>Ke 6d <sup>ar</sup> 5a <sup>2</sup> 5p <sup>4</sup> |
| 054 55              | 137,327<br>302.9 0.90 56   | 174,9668 71             | 178,49 72                              | 180,9478 73                        | 183,84 74                  | 186,207 75                 | 190,23 76              | 192,217<br>880.0 2.20 7.           | 7 195,084 78           | 196,9665 79          | 200,59 80                                | 204,3833 81<br>380,4 1.62                                       | 207,2 273 82                                    | 208,9804 83                                       | 210 200 84                   | 210 220 85  | 220 * 8  |
| S                   | Ba   | Lu                      | Hf a                                   | Ta                                 | W                          | Re                         | Os                     | Ir                                 | Pt                     | Au                   | Hg                                       | TI  | Pb  | Bi  | Po                           | At  | Rn   |
| um i                | Baryum   | Lutécium<br>Ne 40050 Ge | Hafnium<br>Xel 42542.60                | Tantale<br>Nel 9750762             | Tungstène<br>Ne 40° 50° 64 | Rhénium<br>2 Nei 18º 50 60 | Osmium<br>Ne 10°58'62  | Iridium<br>Ne ar 54 62             | Platine<br>Def 10 5P6  | Or<br>Net#*5#*16*    | Mercure<br>Ne: 4º 54º 64                 | Thallium<br>Net 8th 54th 64 6pt                                 | Plomb<br>(Xe) 87 547 547 547 547                | Bismuth<br>Ac an Series op                        | Polonium<br>Xe: 40°5d°6e 6p  | Astate  | Radon  |
| * <u>87</u>         | 226 * 88   | 262 * 103               | 261 * 104                              | 262 * 105                          | 266 * 106                  |                            | 277 * 108              | 268 * 109                          |                        | 272 * 111            | 285 * 112                                |   | 289 * 114                                       |   |                              |   |  |
| 0.50                | Ra   | T (3                    | Rf                                     | Db                                 | a                          | Bh                         | 7                      | Mt                                 | Ds                     |                      | C  | TT .  | Fl  | TT  | Т                            | TT  | TT   |
| eium                | Radium   | Lawrencium              | Rutherfordium                          | Dubnium                            | Sg                         | Bohrium                    | Hassium                | LVLU<br>Meitnerium                 | Darmstadium            | Rg                   | Copernicium                              | Uut   | Flérovium                                       | Uup   | Livermorium                  | Uus   | Uuo  |
| cium                | (Bin) 7s <sup>2</sup>  | Bac 30° 74' 7pt         | Be SP-6P 22                            | Dubhium                            | Seaborgium                 | Donrium                    | riassium               | Mennerium                          | Darmstautum            | Roenigenium          | Copermenum                               | Chuntrium   | Fierovium                                       | Ununpentium                                       | Lavermorium                  | Chunsephum  | Chunocdum  |
| Blocs               | de configuration é   | lectronique             |  |                                    |                            |                            |                        |                                    |                        |                      |  |   |   |   |                              |   |  |
|                     | 188905 57 100.116 58 100.005 59 144.242 60 143 2 61 130.26 62 151.064 63 157.25 64 138.923 65 162.200 66 165.993 67 167.29 68 108.934 70   |                         |  |                                    |                            |                            |                        |                                    |                        |                      |  |   |   |   | 4 70                         |   |  |
|                     |  | p                       | 538.1 1                                |                                    | 1.12 527.0                 | 1.13 576.1                 | 1.14 590.0             | 511.5                              | 1.17 517.1             |                      |  |   | 2 11  | 1.23 .1 389,3                                     | 1.21 3 20.7                  | 3 71  | -3   |
| s d                 |  |                         | La                                     | 200 Contraction (1997)             | e Pi                       |                            |                        |                                    | 0.000                  |                      |  |   | y H   | No. 10000   |                              | and the second se | 700  |
| f.                  | r         Lanthane<br>Visione         Cerium<br>Visione         Prascodyne<br>Visione           Notes         227 * 89         232.0380         90         231.0338         91   |                         |  |                                    |                            |                            | ame Promé<br>a promé   | Xel 40                             |                        | 2 Xel 30 5c          | P Gel Xe 40 Ge                           | Xr 50°6   | si Xe spin                                      | Gel Xei M <sup>12</sup>                           | 52 (Ne) 40% (                | Get Ne Mar G  | 64 <sup>3</sup>  |
| Notes               |  |                         |  |                                    |                            | 259 Ad 229 M               | 289 92 237 3           | 93 244                             | * 94 243               | 95 247               | 96 247 1                                 | 97 251  | 98 252  | 99 257  | 100 258 1                    |   | 102  |
|                     |  |                         | 227                                    | 89 232,03                          | 100                        | 120 305.6                  | 1.38 92 001.5          | UN 90 380                          | 1.28 94 578.0          | 95 247               | 1,30 601.0                               | .30 008.0   | 130 SO 6100                                     | 1,50 00 000 1                                     | 100 258                      | 101 259 1<br>50 101 612.0 1   | 102  |
|                     | ant, les éléments 113<br>nom officiel désigne  |                         | Ac                                     | .10 .3 587.0                       | 10                         | 120 305.6                  | 1.38 92<br>NI          | 2 3817                             |                        | -6 -6                | 1,30 1 001.0                             | .30 008.0   | Es Es   | 1.00  | 1 3 4                        |   | 1  |

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The periodic table of chemical elements is having its 150th birthday, and the U.N. scientific agency is holding a year of events to celebrate.

Anyone who has studied chemistry will recognize the table, which organizes all <u>chemical elements</u> by the number of protons in a given



atom and other properties. Russian scientist Dmitry Mendeleev published the first such table in 1869.

The U.N. Education, Scientific and Cultural Organization kicked off the "International Year of the Period Table of Chemical Elements" on Tuesday with a ceremony including a Nobel <u>chemistry</u> laureate and Russia's science minister, among other dignitaries.

Other activities UNESCO is organizing this year include an online competition to test high school students' knowledge of the table, and <u>scientific experiments</u> brought to schools around the world.

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