Propiedades tabla periodica

If you see this message, it means that we are having trouble loading external resources on our website. If you are behind a webpage filter, make sure that *.kastatic.org and *.kasandbox.org domains are unlocked. Modern periodic table, with 18 columns, which includes the symbols of the last four new items approved on November 28, 2016 by IUPAC: Nh, Mc, Ts and And. [1] The periodic table of elements is an arrangement of the chemical elements in the form of a table, sorted by their atomic number (number of protons),[2] according to their electron configuration and chemical properties. This type shows periodic trends, such as similar behavior items in the same column. In the words of Theodor Benfey, the table and the periodic law are the heart of chemistry – comparable to the theory of evolution in biology (as happened with the term Great Chain of Being), and with the laws of thermodynamics in classical physics. [3] The rows in the table are called periods and group columns. Some groups have names, such as group 17 is halogen and group 18 is of precious gases. [5] The table is also divided into four blocks with some similar chemical properties. [6] Because positions are sorted, you can use the table to retrieve relationships between item properties or forecast properties for new items that have not yet been detected or synthesized. The periodic table provides a useful framework for analyzing chemical behavior and is widely used in chemistry and other sciences. In 1869, Dmitry Mendeleyev published the first version of the periodic table that was widely recognized, developed it to illustrate periodic trends in the characteristics of the elements then known, by sorting the elements based on their chemical properties,[7] although Julius Lothar Meyer, who worked separately, made an order based on the physical characteristics of atoms. [8] Mendeleev also predicted some characteristics of then unknown elements that he expected would occupy the empty places in his table. It was later shown that most of his predictions were correct when the relevant elements were discovered. Mendeleev's periodic table has since been expanded and improved with the discovery or synthesis of new elements and the development of new theoretical models to explain chemical behavior. The current structure was designed by Alfred Werner from mendeleev's version. There are also other periodic schemes according to different characteristics and depending on the use you want to give it (in didactics, geology, etc.). [9] It is not the first time the detected or synthesized all atomic number elements from 1 (hydrogen) to 118 (oganeson); IUPAC confirmed items 113, 115, 117 and 118 on December 30, 2015,[10] and their official names and symbols were made public on 28 November 2016. [i. 1] Elements with atomic figures from 95 to 118 have only been synthesized in laboratories. There were also many synthetic radio stops of elements present in nature. The elements of 95 to 100 existed in the wild in earlier times, but not today. [11] Research to find new elements of higher atomic numbers continues. Periodic table of items[12] Group 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 Block s d p ↓Período ? Helium belongs to block s 1 1H 2Han 2 3Li 4Be 5B 6C 7N 8O 9F 10Ne 3 11Na 12Mg 13Al 14Si 15P 16S 17Cl 18Ar 4 19K 20Ca 21Sc 22Ti 23V 24Cr 25Mn 26Fe 27Co 28Ni 29Cu 30Zn 31Ga 32Ge 33As 34See 35Br 36Kr 5 37Rb 38Sr 39Y 40Zr 41Nb 42Mo 43Tc 44Ru 45Rh 46Pd 47Ag 48 Cd 49In 50Sn 51Sb 52Te 53I 54Xe 6 55Cs 56Ba 57-71* 72Hf 73Ta 74W 75Re 76Os 77Ir 78Pt 79Au 80Hg 70Hg81Tl 82Pb 83Bi 84Po 85At 86Rn 7 87Fr 88Ra 89-103** 104Rf 105Db 106Sg 107Bh 108Hs 109Mt 110Ds 111Rg 112Cn 113Nh 114Fl 115Mc 116Lv 117Ts 118And 8 119Uue Bloque f d * Lantánidos 57La 58Ce 59Pr 60Nd 61 Pm 62Sm 63Eu 64Gd 65Tb 66Dy 67Ho 68Er 69Tm 70Yb 71Lu ** Actínidos 89Ac 90Th 91Pa 92U 93Np 9 4Pu 95Am 96Cm 97Bk 98Cf 99Es 100Fm 101Md 102No 103Lr Leyenda Estado de agregación de la materia a 0°C y 1 atm(atm Según el color del número atómico) 1H <- Número atómico Rojo Azul Negro Gris <- Símbolo químico Gaseoso Líquido Sólido Desconocido Categorías (según el color background) Metal metals Non-alkaline metals Alkaline lanthanides Transfer metals Other non-nometal Halogen Gasesnobles Actinides For a more detailed version of the periodic table with hypertext, see Appendix:Periodic table. History The history of the periodic table is closely related to several aspects of the development of chemistry and physics: the discovery of the elements of the periodic table. The study of common characteristics and classification of elements. The notion of atomic mass (originally called atomic weight) and later as early as the twentieth century (d). C., nuclear number. The relationship between the atomic mass (and later the atomic number) and the periodic characteristics of the elements and the appearance of new elements. Discovery of the elements Main article: Discovery of chemical elements Although some elements gold (Au), silver (Ag), copper (Cu), lead (Pb) and mercury (Hg) were already known since ancient times, the first scientific discovery of an element occurred in the 17th century d. C., when the alchemist Hennig Brand discovered phosphorus (P). [13] In the 18th century D.C. many new elements were known, the most important of which were gases, with the development of pneumatic chemistry: oxygen (O), hydrogen (H) and nitrogen (N). Also consolidated in these years was the new perception of element, which led Antoine Lavoisier to write his famous list of simple fabrics, in which 33 elements appeared. In the early 19th century D.C., the application of the electric battery to the study of chemical phenomena led to the discovery of new elements, such as alkaline metals and alkaline tea, especially thanks to the work of Humphry Davy. In 1830, 55 items were already known. Later, in the mid-19th century D.C., with the invention of the spectroscope, new elements were discovered, many of them named after the color of their characteristic spectral lines: cesium (Cs, from Latin caes-us, blue), taldium (Tl, stem, of its green color), rubidium (Rb, red), etc. During the twentieth century D.C., research on radioactive processes led to the pervasive discovery of a variety of heavy elements (almost always laboratory-synthesized artificial substances , with very short stable lifetime periods), and reached the number of 118 named items officially accepted by IUPAC in November 2016. [1] The concept element and periodic properties Logically was a necessary prerequisite for the construction of the periodic table the discovery of a sufficient number of individual elements, which made it possible to find some pattern in chemical behavior and its characteristics. Over the next two centuries, greater knowledge of these properties was acquired, as well as to discover many new elements. The word element comes from Greek science, but the modern notion appeared throughout the 17th century (d). C., although there is no clear consensus on the process that led to consolidation and widespread use. Some authors cite as a precedent the expression of Robert Boyle in his famous work The Skeptical Chemist, in which he calls elements certain primitive and simple bodies that are not formed by other bodies, nor by each other, and which are the ingredients that are composed immediately and where all perfectly mixed bodies are finally solved. In fact, that expression appears in the context of Robert Boyle's critique of the four aristotelian elements. Throughout the 17th century, the world's most 10 000 people have C., the affinity tables picked up a new way to the chemical composition, which is clearly exhibited by Lavoisier in his work Elemental Treaty of Chemistry. All this led to a difference in the first place which substances in the substances known up to that time were chemical elements, what their properties were and how to isolate them. The discovery of a large number of new elements, as well as the study of their characteristics, revealed some similarities between them, which increased the interest of chemists in finding some kind of classification. Atomic weights At the beginning. C 19th century John Dalton (1766-1844) developed a new conception of atomicism, which he came to thanks to his meteorological studies and the gases in the atmosphere. His main contribution was the design of a chemical atomism that allowed the integration of the new definition of element made by Antoine Lavoisier (1743-1794) and the weight laws of chemistry (defined proportions, multiple proportions, mutual proportions). Dalton used knowledge of proportions in which the substances of his time reacted and made some assumptions about how atoms of them were combined. He established as the reference unit the mass of a hydrogen atom (although others were proposed in those years) and referred the rest of the values to this device, so that he was able to build a system of relative atomic masses. For example, in the case of oxygen, Dalton assumed that water was a binary compound, consisting of a hydrogen atom and one oxygen atom. He had no way to check this point, so he had to accept this opportunity as a priori hypothesis. Dalton knew that part of hydrogen was combined with seven parts (eight, we would now claim) oxygen to produce water. Therefore, if the combination was produced atom by atom, that is, a hydrogen atom was combined with an oxygen atom, the ratio of the masses of these atoms should be 1:7 (or 1:8 would be calculated today). The result was the first table of relative atomic masses (or atomic scales, as Dalton called them), which were later modified and developed in subsequent years. The above inaccuracies resulted in a whole host of controversies and differences about nuclear formulas and weights, which would only begin to be overcome, but not entirely, at the Karlsruhe Congress in 1860. First experiments at systematization In 1789, Antoine Lavoisier published a list of 33 chemical elements, and grouped them into gases, metals, not metals and soil. [15] Although it was very practical and still functional in the modern periodic table, it was rejected because there were many differences in both properties as in chemistry. [quote required] Chemists spent the next century looking for a more accurate classification scheme. One of the first attempts to group the elements into similar characteristics and relate them to the atomic weights is due to the German chemist Johann Wolfgang D'bereiner (1780-1849) who in 1817 revealed the remarkable similarity that existed between the characteristics of certain groups of three elements, with a gradual variation from the first to the last. Then (1827) he noted the existence of other groups in which the same relationship was given - chlorine, bromine and iodine; sulfur, selenium and telurium; lithium, sodium and potassium. LiClLiOH Lithium Triads Calcium CaCl2CaSO4 Sulfur H2SSO2 Sodium NaClNaOH Strontium SrCl2SrSO4 Selenium H2SeSeO2 Potassium KClKOH Bario BaCl2BaSO4 Telurium H2TeTeO2 These groups of three elements were called triads. By classifying them, dobereines explained that the average atomic weight of the weights of the extreme elements is similar to the element in the middle. [16] This became known as the Triad Act. [17] For example, for chlor bromine iodine triad, the atomic scales are 36, 80 and 127, respectively; the average is 81, which is about 80; The element with the atomic weight of about 80 is bromine, which makes it in accordance with the apparent order of triads. The German chemist Leopold Gmelin worked on this system, and in 1843 had identified ten triads, three groups of four and a group of five. Jean-Baptiste Dumas published the work in 1857 describing the relationship between the different metal groups. Although the various chemists were able to identify the relationship between small groups of elements, they still had to build a scheme that included them all. [16] In 1857, German chemist August Kekulé observed that carbon is often attached to four other atoms. Methane, for example, has one carbon atom and four hydrogen atoms. [18] This concept would eventually be known as valencia. In 1862, from Chancourtois, a French geologist, he published a first form of periodic table that he called telurical propeller or screw. He was the first person to notice the periodicity of the elements. By spiraling them over a cylinder in increasing order of atomic weight, Chancourtois showed that elements with similar characteristics appeared to occur periodically. The table also contains some ions and compounds. It also uses geological terms instead of chemicals and does not include a chart; As a result, he received little attention before the work of Dmitry Mendeleev. [20] In 1864, Julius Lothar Meyer, a German chemist, published a table with 44 elements arranged by Valencia. It showed that elements with properties They often shared the same waltz. [21] At the same time, William Odling (an English chemist) published a series of 57 items ordered according to his atomic weights. With some irregularities and holes, he realized what appeared to be a periodicity of atomic weights between the elements and that this agreed with the groups they usually received. [22] Odling alludes to the idea of a periodic law, but did not follow it. [23] In 1870, he proposed a classification based on the valence of the elements. Newlands Octave Act The English chemist John Newlands produced a number of documents from 1863 to 1866 and noted that when the elements are listed to increase atomic weight, similar physical and chemical properties are repeated at intervals of eight. [i. 2] Newlands Octave Act 1 2 3 4 5 6 7 Li6.9Na23.0K39.0 Be9,0Mg24,3Ca40,0 B10.8Al27 ,10 C12,0Si28,1 N14,0P31.0 O16,0S32,1 F19,0Cl35.5 Compared this periodicity with octaves of music. [26] This so-called law of octaves was ridiculed by Newland's contemporaries, and the Chemical Society refused to publish its work,[27] because it stopped being fulfilled from calcium. However, Newlands was able to draw up a table of elements and used it to predict the existence of missing elements, such as Germanium. [28] The Chemical Society only recognized the significance of its findings five years after Mendeleev was credited,[29] and was later recognized by the Royal Society, which awarded Newlands its highest decoration, the Davy Medal. [30] In 1867, Gustavus Hinrichs, a Danish chemist, published a periodic spiral system based on spectra, atomic scales and other chemical similarities. His work was considered too complicated, which is why he was not accepted. [32] Periodic table of Mendeleev Main article: Periodic Table of Mendeleev Mendeleev Table published in 1872. In it leaves free boxes for the items to be discovered. In 1869, the Russian chemistry professor Dmitry Ivanovich Mendeleyev published his first periodic table in Germany. A year later, Julius Lothar Meyer published an extended version of the table he had made in 1864, based on the periodicity of nuclear volumes based on the atomic mass of the elements. [35] On this date, 63 elements of the 92 that exist naturally between hydrogen and uranium were already known. Both chemists placed the elements in increasing order of their atomic masses, grouped them into rows or periods of different lengths, and placed elements in the same group that had similar chemical properties, such as valence. They built their boards a list of items in rows or columns based on the atomic weight and start a new row or column when the properties of the items began to repeat. [36] The recognition and acceptance given to Mendeleev's board came from two decisions he made. The first was to leave holes when it seemed that the corresponding item had not yet been discovered. [37] He was not the first to do so, but he was recognized in the use of trends in his periodic table to predict the characteristics of the missing elements. [38] He even predicted the properties of some of them: gallium (Ga), which he called eka-aluminum because it was under the aluminum; germanium (Ge), which he called eka-silicon; Scandio (Sc); and technetium (Tc), which, chemically isolated from the remains of a synchrotron in 1937, became the first predominantly artificially produced element. The second decision was to ignore the order proposed by atomic scales and change adjacent elements, such as telurium and iodine, to better classify them into chemical families. In 1913, Henry Moseley determined the experimental values of the atomic charge or atomic number of each element, and showed that mendeleev's order effectively corresponds to what has been achieved by increasing the atomic number. [39] The significance of these figures in the organization of the periodic table was not appreciated until the existence and characteristics of protons and neutrons were understood. Mendeleev's periodic tables use the atomic scale instead of the atomic number to organize the elements, precisely specific information at the time. The atomic scale worked quite well for most cases so that they could predict the properties of missing elements more accurately than any other method known then. Moseley predicted that the only missing elements between aluminum (Z x 13) and gold (Z x 79) were Z's 43, 61, 72 and 75, which were later discovered. The sequence of atomic numbers is still used today, although new elements have been detected and synthesized. [40] Other periodic table of Mendeleev and subsequent development Mendeleev Periodic table of 1871 with 8 groups of elements. Scripts represent unknown items on this date. In 1871, Mendeleev published his periodic table in a new form, with groups of similar elements arranged in columns instead of rows, numbered I to VIII in correlation with the oxidation state of the element. He also made detailed predictions about the characteristics of the elements he had already pointed out were missing, but should exist. [41] These holes were later filled when the chemicals several natural elements. [42] In its new table, it contains the sort order of the columns based on hydrides and oxides that can form these elements, and therefore implicit lying of these elements. It still produced conflicting results (Silver and Gold appear duplicates, and there is no separation between Berilio and Magnesium with Boro and Aluminum), but it was a breakthrough. This table was completed with a group more, consisting of the precious gases discovered in the life of Mendeleev, but which by their characteristics had no place in the table, so it had to wait almost thirty years, until 1904, with the group or zero valencia, so that the table was more complete. It is often claimed that the last natural element discovered was the Frenchman – designated by Mendeleev as eka-cesium – in 1939. Plutonium, produced synthetically in 1940, was identified in small quantities as a main element of natural origin in 1971. [44] The design of the standard periodic table[45] can be attributed to Horace Groves Deming, an American chemist who in 1923 published a periodic table of 18 columns. [46] In 1928, Merck and Company prepared a brochure with this chart, which was widely disseminated in American schools. In the 1930s he was part of manuals and chemistry encyclopedias. It was also distributed for many years by the Sargent-Welch Scientific Company. [49] Quantum mechanics and progressive expansion of the table Mendeleev's periodic tables had certain irregularities and problems. In the decades that follow, he had to integrate the findings of precious gases, 120 and No. 172 or Z x 124-126 and No. [114] Other predictions of the end of the periodic table include John Emsley's element 128,[11] Richard Feynman's item 137 [115] and Albert Khazan's element 155. [11] The Bohr Model Bohr's model, not relativistic, shows difficulties for atoms with atomic numbers greater than 137, as these would require electrons 1s to travel faster than c, the speed of light, making it inaccurate and cannot be applied to these elements. [117] Dirac's relativistic equation Dirac's relativistic equation has problems for elements with more than 137 protons. For them, the wave function of Dirac's basic state is oscillating, and there is no difference between the positive and negative energy spectrum, as in the Klein paradox. [118] If more accurate calculations are performed, taking into account the effect of limited core size, the coupling energy is found to exceed the limit of elements with more than 173 protons. For heavier elements, if the innermost orbital (1s) is not full, the nuclear electric field pulls an electron from the vacuum, resulting in the spontaneous discharge of a positron; [119] However, this does not happen if the innermost orbital is full, so element 173 is not necessarily the end of the periodic table. [115] Location of hydrogen and helium Only by electronic configurations, hydrogen (electronic configuration 1s1) and helium (1s2) are placed in groups 1 and 2, over lithium ([Han]2s1) and beryllium ([Han]2s2). [71] However, this location is rarely used outside the framework of electronic configurations: when precious gases – then called inerte gases – were first detected around 1900, were they first discovered around 1900, they were first discovered around 1900, they were first discovered around 1900, they were first discovered around 1900 , they were first discovered around 1900, they were first discovered around 1900, they were first discovered around as group 0, reflecting that they were not known for any chemical reactivity at the time, and helium was placed on top of that group, because it shared this extreme situation. Although the group changed its formal number, many writers continued to place helium just above neon in group 18; one of the examples of such a location is the current IUPAC table. [120] The chemical properties of hydrogen are not very close to those of alkaline metals, which occupy group 1, and therefore hydrogen is sometimes placed elsewhere: one of the most common options is in group 17. One of the reasons for this is the strictly univalent predominantly non-metallic chemistry of hydrogen, fluoride - the element placed on top of group 17 - is strictly univalent and non-metallic. Sometimes, to show how hydrogen has both properties corresponding to those of alkaline metals and halogens, it can appear in two columns at once. [121] It can also be displayed above carbon in group 14: so placed it adapts well to increased trends in ionization potential values and electronaffinity values, and does not go too far from the electronegability trend. [122] In the end, hydrogen is sometimes placed separately from any group because its properties generally differ from those of any group: unlike hydrogen, the other elements of group 1 show extremely metallic behavior; the elements of group 17 usually form salts - hence the term halogen; elements in another group show multivalent chemistry. The second element in period 1, helium, is sometimes placed separately from any group as well. [123] The property that separates helium from the rest of the noble gases – although the extraordinary inert character is very close to neon and argon – is that helium in the closed layer of electrons has only two electrons in the outer most outer orbital, while the rest of the noble gases have eight. Groups included in transitional metals According to IUPAC, a transitional metal is an element whose atom has an incomplete or cationic substrate d. [125] According to this definition, all elements of group 3 to 11 transition metals and group 12, consisting of zinc, cadmium and mercury, are excluded. Some chemists consider block d elements and transition metals to be interchangeable categories, including group 12 as a special case of transition metal where electrons d usually do not participate in chemical bonding. The discovery that mercury can electrons d in the formation of mercury fluoride (IV) (HgF4) led some scientists to suggest that mercury may be considered a transitional metal. [126] Others, such as Jensen, argue that the formation of a substance such as HgF4 can only occur in very abnormal conditions. As such, mercury can not be considered a transitional metal by any reasonable interpretation in the normal sense of the term. [127] In other cases, they do not include group 3, claiming that they do not form ions with a partially occupied d-layer and therefore do not show the chemical properties of transitional metals. [128] Elements in group 3 in periods 6 and 7 Although Scandinavia and Itrio are always the first two elements of group 3, the identity of the next two elements is not solved. They are either lanthanum and actinium, or lutetium and lawrentium. There are physical and chemical arguments to support this latter provision,[82][129] but not all writers are convinced. [130] Lanthanum and actinium are traditionally depicted as the remaining members of group 3. [131] It has been suggested that this design originated in the 1940s, with the emergence of periodic tables that rely on electronic element configurations and the concept of electrondiensiering. The cesium, barium, and lanthanum configurations are [Xe]6s1, [Xe]6s2, and [Xe]5d16s2. Therefore, lanthanum has a 5d differentiation electron, and this establishes it in group 3 as the first member of block d for period 6. [132] Group 3 displays a consistent set of electronic configurations: scandium [Ar]3d14s2, itrio [Kr]4d15s2 and lanthanum. Even in period 6, iterbio was assigned an electronic configuration of [Xe]4f135d16s2 and [Xe]4f145d16s2 for lutetium, resulting in a 4f differentiation electron for lutetium and firmly establishing it as the last member of block f for period 6. Matthias describes the location of lanthanum during the itrium as a failure of the periodic system – unfortunately propagated mainly by the company Welch [Sargent-Welch] ... And... all copied it. Lavelle rejected it by providing a number of well-known reference books with periodic tables with such a provision. [134] The first techniques for chemical separation of Scandinavia, itrio and lutetium were based on the fact that these elements were produced together in the so-called itrio group, while La and Ac were produced together in the cerium group. [132] In the 1920s and 1930s, some chemicals placed lutetium in group 3 instead of lanthanum. [i. 11] Subsequent spectroscopic work found that iterbic electronics were actually [Xe]4f146s2. This meant that iterbic and lutetium had 14 f electrons, resulting in a differentiating electron d instead of f for the latter, making it an equally valid candidate for the next position of the periodic table in group 3 under itrium. [132] Several physicists in the 1950s and 1960s chose lutetium, in view of a comparison of several of its physical characteristics with lanthanum. [132] This provision, in which lanthanum is the first member of block f, is challenged by some authors since this element lacks f electrons. However, it has been argued that this is not a valid concern since there are other anomalies in the periodic table, such as torium, which do not have f electrons, but are part of that block. [135] As for lawrentium, the electronic configuration was confirmed in 2015 as [Rn]5f147s27p1, representing another periodic table deviation, regardless of whether it is placed in block d or f, as the potentially current p-block position is reserved for nihonium as an electronic configuration of [Rn] 5f146d107s27p1 is scheduled. [136] Optimal form The many different forms in the periodic table have led to the question of whether it is an optimal or definitive form. The answer to this question is believed to depend on whether chemical periodicity has an underlying truth, or instead is a product of subjective human interpretation, depending on the circumstances, beliefs and penchants of human observers. An objective basis can be established for chemical periodicity by determining the location of hydrogen and helium, and the composition of group 3. In the absence of an objective truth, the different forms in the periodic table can be considered variations of the chemical periodicity, each of which explores and emphasizes different aspects, characteristics, perspectives and relationships between and between the elements. It is believed that the ubiquity of the standard periodic table is a consequence of its design, which has a good balance of properties in terms of simple construction and size, and its description of the atomic order and periodic trends. [23] Elements Status of the elements under normal pressure and temperature conditions (0oC and 1 atm). Gases Element Symbol Group Period Atom Mass Protons Neutrons Electrons Hydrogen H 1 1 1 1 0 1 Nitrogen N 15 2 7 14 7 7 Oxygen O 16 2 8 16 8 8 8 Fluoride F 17 2 9 19 9 1 0 9 Chlorine Cl 17 3 17 35 17 19 17 Helio He 18 1 2 4 2 2 Neon Ne 18 2 10 20 10 10 10 Argon Ar 18 3 18 40 18 22 18 Krypton Nok 18 4 36 84 36 48 36 Xenon Xe 18 5 54 131 54 77 54 Radon Rn 18 6 86 222 86 136 86 Liquids Element Symbol Period Atom Mass Protons Neutron Electrons Cesio Cs 1 6 55 133 55 78 55 Francio Fr 1 7 87 223 87 136 87 Mercury Hg 12 6 80 201 80 121 80 Galio Ga 13 4 31 70 3 1 39 31 Brom Br 17 4 35 80 35 45 35 Transition elements Element Symbol Group Period Atom Protons Neutrons Electrons Rutherfordio Rf 4 7 104 261 104 157 104 Dubnio Db 5 7 105 262 105 157 105 Seaborgio Sg 6 7 106 263 106 157 106 Tecnecio Tc 7 5 43 99 43 56 43 Bohrio Bh 7 7 107 262 107 155 107 Hassio Hs 8 7 108 265 108 157 108 Meitnerio Mt 9 7 109 266 1 09 157 109 Darmstadtio Ds 10 7 110 271 110 161 110 Roentgenio Rg 11 7 111 272 111 161 111 Copernicio Cn 12 7 112 272 112 160 112 Nihonio Nh 13 7 113 283 113 170 113 Flerovio Fl 14 7 114 285 114 171 114 Moscovio Mc 15 7 115 288 115 173 115 Livermorio Lv 16 7 116 289 116 173 116 Teneso Ts 17 7 117 291 117 17 4 117 And 18 7 118 293 118 175 118 Lanthanid and Actinid Elements Symbol Group Atom Protons Neutrons Electrons Promised Pm Lan (-) 61 14 7 61 86 61 Neptunio Np Actínido (-) 93 237 93 144 93 Plutonium Puinido (-) 94 244 94 150 94 Americio Am Actínido (-) 95 243 95 148 95 Curio Cm Actínido (-) 96 247 96 151 96 Berkelio Bk Act Californio (-) 9697 247 97 150 97 Californio Cf Actínido (-) 98 251 98 153 98 Einstenio Es Actínido (-) 99 252 9 9 1 53 99 Fermio Fm Actínido (-) 100 257 100 157 100 Mendelevio Md Actínido (-) 101 258 101 157 1 01 Nobel non-actinid (-) 102 259 102 157 102 Laurencio Lr Actínido (-) 103 262 103 159 103 Alkaline and Alkaline solids Element Symbol Group Period Atom Mass Protons Neutron Electrons Lithium Li Alkaline 2 3 7 3 3 3 Sodium Na Alkaline 3 11 23 11 12 11 Potassium K Alkaline 4 19 39 19 20 19 Rubidio Rb Alkaline 5 37 86 37 49 37 Berilio Be Alcalinotérreo 2 4 9 4 5 5 4 Magnesium Mg Alcalinotérreo 3 12 24 12 12 Calcium Ca Alcalinotérreo 4 20 40 20 20 20 Strontium Sr Alcalinotérreo 5 38 88 38 50 38 Bario Ba Alcalinotérreo 6 56 137 56 81 56 Radio Ra Alcalinotérreo 7 88 226 88 138 88 Solids of the families of scandium, titanium, vanadium and copper Element Symbol Group Group Period Atom Protons Neutrons Electrons Escandio Sc Escandio 4 21 45 21 24 21 Itrio Y Escandio 5 39 89 39 50 0 50 39 La La Escandio 6 57 139 57 82 57 Actinio Ac Escandio 7 89 227 89 138 89 Titanium Ti Titanium 4 22 48 22 26 22 Circonium Zr Titanium 5 40 91 40 51 40 Hafnio Hf Titanium 6 72 179 72 105 72 Vanadio V Vanadio 4 23 50 23 27 23 Niobio Nb Vanadio 5 41 93 41 5 2 41 Tantalio Ta Vanadio 6 73 181 73 108 73 Copper Cu Cobre 4 29 64 29 35 29 Silver Ag Copper 5 47 107 47 61 47 Gold Au Cobre 6 79 196 79 118 79 See also Table Options Periodic table of the elements extended Extended periodic table shifted by the left The periodic table of Dmitry Mendeleyev Chemical nomenclature of inorganic compounds (for Number of valence of the elements) Annex:Chemical elements by attachment symbol:Chemical elements in alphabetical order Abundance of chemical elements Name of the elements The discovery of chemical elements Notes - The elements that were originally discovered by synthesis and later in nature are technetium (43), promised (61), astat (85), neptune (93) and plutonium (94). By this time, so-called precious gases had not yet been detected. As far as 1892, an extra-long periodic table had been postulated with a second row to accommodate known and unknown elements with a greater atomic weight of bismuth – thorium, protactinium and uranium, for example. However, most scientists considered these elements analogous to those in transition group 3 – hafnium, tantalum and tungsten. The existence of another series of internal transition, in the form of actinids, was not accepted until they established similarities with the electronic structures of lanthanides. [53] There are inconsistencies and some irregularities in this Convention. For example, helium appears in block p, but is actually an element in block s, and for example, the substrate d is filled in block d when block 11 is reached, instead of 12. In 2008, 100,000 people were appointed to the Norway. Inorganic chemistry (3rd ed.) Czech chemist Bohuslav Brauner is credited with separating lanthanides from the main part of the periodic table that in 1902 assigns them all (Ce, etc.) to a position in group 4, under zirconia. This scheme is known as the asteroid hypothesis, in analogy with asteroids that occupy a single orbit in the solar system. Before that, lanthanides were generally (and successfully) placed along group I to VIII in the oldest form of the periodic table, 8 columns. Although the predecessors of Brauner's event have been recorded since 1895, they are known to have referred to asteroid chemistry in a letter to Mendeleev in 1881. Other authors assign all lanthanides to groups 3, groups 3 and 4, or groups 2, 3, and 4. In 1922, Niels Bohr continued the secession process by locating lanthanides between blocks and d. In 1949, Glenn T. Seaborg presented the form of periodic table that is popular today, in which lanthanides and actinids appear as footnotes. He first published his table in a report classified in 1944. It was republished by him in 1945 in Chemical and Engineering News, and in 1949 several authors commented, and generally agreed with, his proposal. In that year it was observed that the best method of presenting actinids seemed to be by placing them next, and analogues of lanthanides. Jensen writes: The two paintings under Sc and Y ... or contains atomic numbers 57-71 and 89-103 or the symbols of La-Lu and Ac-Lr respectively, indicating that the 30 elements of the footnote belong only to these two boxes. Extending this table to a 32-column table would require stretching Sc and Y boxes to cover all 15 of the inserted columns. . . . Habashi attempts to overcome this objection by placing the 15 sloping in a high-rise 15-storey tower that rises from the location of the periodic table under the itrium. [86] For each atomic mass, there is a maximum number of protons and a different number of neutrons that can be held together. If a Segro chart is made with this information, two lines, called proton and neutron drip lines, are obtained, respectively, because if more nucleids are added, they will drain or drip without joining the nucleus permanently. [113] P. J. Karol argues that gravitational effects can become significant when atomic figures become astronomically large, thus overcoming other instability phenomena generated by the large mass of nuclei, and that neutron stars — with atomic numbers in the order of 1021 — can be considered the representation of the heaviest known elements in the universe. [116] The phenomenon of separation in different groups is caused by increased reason for increased radius, and is not a fundamental reason to show lutetium during itrio instead of lanthanum. Therefore, among group 2 alkaline metals, magnesium - less basic - belongs to soluble group and calcium, strontium and barium -more basic - are in the ammonium carbonate group. 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