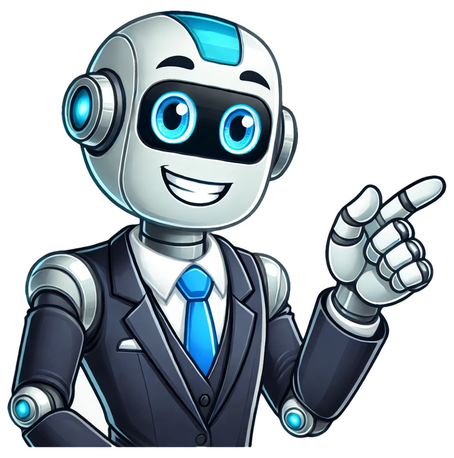
Click to prove
you're human



OpenAI recently agreed to acquire IO, an AI hardware start-up cofounded by Jony Ive, the design genius behind the iMac, iPod, iPhone, iPad, and Apple Watch. The deal, valued at $6.5 billion, reflected a mutual goal between Ive and OpenAI CEO Sam Altman to move beyond conventional devices like smartphones and develop new hardware designed for artificial general intelligence. Ive, who has voiced misgivings about the constant connectivity enabled by devices he helped create, framed the project as an opportunity to rethink how we interact with technology. Can AI Really Duplicate Human Intellectual Abilities? © Open University Quiz: Artificial Intelligence 4 Strategies for Investing in AI Stocks Since 1925 American grade-school students (and a few from outside the U.S.) have participated in the Scripps National Spelling Bee, which starts today. Here are a few of the hard-to-spell "final words" that have resulted in victory over the years. EsquamuloseIn 1962 the bee came down to Nettie Crawford and Michael Day, who, according to the Associated Press's account, "engaged in more than an hour of head-and-head wrestling with words that grew stranger by the round." The contest was declared a draw when neither could correctly spell esquamulose—which is nonetheless considered the year's "winning word." Esquamulose is the opposite of squamulose, which means "being or having a thallus made up of small leafy lobes." EczemaWords used in the medical profession are notorious for stumping spellers, so it's no surprise that they appear frequently in the list of winning words. In fact, eczema maintains the distinction of being the only word to have resulted in victory on two separate occasions—in 1936 for Jean Trowbridge and in 1965 for Michael Kerpan, Jr. Among the other medical terms on the list are two other skin ailments: psoriasis (1982) and xanthosis (1995)—as well as odontalgia (1986), which most people know better as toothache. VivisepultureOf the many uncommon words featured in the bee, some of the most fascinating are the ones that prompt the exclamation, "I didn't know there was a word for that!" One of the best examples from the list of winning words is vivisepulture (1996), which means "the act or practice of burying alive"—a term that's certainly far less familiar than the morbid concept it describes. Popular ProCon Debate Topics Britannica's content is among the most trusted in the world. Subscribe to Britannica Premium and unlock our entire database of trusted content today. Subscribe Now! ProCon Award-winning ProCon promotes critical thinking, education, and informed citizenship by presenting the pro and con arguments to controversial issues in a straightforward, nonpartisan, freely accessible way. Britannica Money Discover all you need to know about retirement, investing, and household finance, without the jargon or agenda. Get reliable guidance, insight, and easy-to-understand explanations, written, edited, and verified to Britannica's exacting standards. Advocacy for Animals Presenting Advocacy for Animals, a blog focused primarily on animal rights, wildlife conservation, environmental health and safety, and the legal and cultural issues related to these topics. This blog is a source of information and a call to action. It is meant to be a provocation and a stimulus to thought regarding humanity's relationship with nonhuman animals. Alain Elkann Interviews Alain has been writing a weekly interview column for the Italian newspaper La Stampa since 1989. His interviews celebrate some of the best known and successful personalities of the present day. The information on this page is ✔ fact-checked. Tin electron configuration | Image: Learnool The tin electron configuration, represented as [Kr] 5s2 4d10 5p2 or 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2, illustrates the precise arrangement of electrons within the atom. This configuration can be determined through various methods, including the aufbau principle, periodic table organization, Bohr model representation, or orbital diagram visualization. First, find electrons of tin atom Periodic table | Image: Learnool The atomic number of tin represents the total number of electrons of tin. Since the atomic number of tin is 50, the total electrons of tin are 50. Second, make a table of subshell and its maximum electrons Calculate the maximum number of electrons each subshell can hold using the formula: 4ℓ + 2 Where, ℓ = azimuthal quantum number of the subshell For s subshell, ℓ = 0For p subshell, ℓ = 1For d subshell, ℓ = 2For f subshell, ℓ = 3 This means that, Each s subshell can hold maximum 2 electronsEach p subshell can hold maximum 6 electronsEach d subshell can hold maximum 10 electronsEach f subshell can hold maximum 14 electrons Finally, use aufbau chart and start writing electron configuration Remember that we have a total of 50 electrons. According to the aufbau principle, 1s subshell is filled first and then 2s, 2p, 3s… and so on. Use 2 electrons for 1s subshell | Image: Learnool By looking at the chart, you can see that electrons are first filled in 1s subshell. Each s-subshell can hold a maximum of 2 electrons, so we will use 2 electrons for the 1s subshell. So the electron configuration will be 1s2. Where, 1s2 indicates that the 1s subshell has 2 electrons. Now we have used 2 electrons in the 1s subshell, so we have a total of 50 – 2 = 48 electrons left. Use 2 electrons for 2s subshell | Image: Learnool Looking at the chart, after 1s subshell now comes 2s subshell. Again, each s-subshell can hold a maximum of 2 electrons, so we will use 2 electrons for the 2s subshell. So the electron configuration will be 1s2 2s2. Where, 2s2 indicates that the 2s subshell has 2 electrons. Again, we have used 2 electrons in the 2s subshell, so we have a total of 48 – 2 = 46 electrons left. Use 6 electrons for 2p subshell | Image: Learnool After 2s subshell now comes 2p subshell. Each p-subshell can hold a maximum of 6 electrons, so we will use 6 electrons for the 2p subshell. So the electron configuration will be 1s2 2s2 2p6. Where, 2p6 indicates that the 2p subshell has 6 electrons. Here, we have used 6 electrons in the 2p subshell, so we have a total of 46 – 6 = 40 electrons left. Use 2 electrons for 3s subshell | Image: Learnool After 2p subshell now comes 3s subshell. Each s-subshell can hold a maximum of 2 electrons, so we will use 2 electrons for the 3s subshell. So the electron configuration will be 1s2 2s2 2p6 3s2. Where, 3s2 indicates that the 3s subshell has 2 electrons. Here, we have used 2 electrons in the 3s subshell, so we have a total of 40 – 2 = 38 electrons left. Use 6 electrons for 3p subshell | Image: Learnool After 3s subshell now comes 3p subshell. Each p-subshell can hold a maximum of 6 electrons, so we will use 6 electrons for the 3p subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6. Where, 3p6 indicates that the 3p subshell has 6 electrons. Here, we have used 6 electrons in the 3p subshell, so we have a total of 38 – 6 = 32 electrons left. Use 2 electrons for 4s subshell | Image: Learnool After 3p subshell now comes 4s subshell. Each s-subshell can hold a maximum of 2 electrons, so we will use 2 electrons for the 4s subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2. Where, 4s2 indicates that the 4s subshell has 2 electrons. Here, we have used 2 electrons in the 4s subshell, so we have a total of 32 – 2 = 30 electrons left. Use 10 electrons for 3d subshell | Image: Learnool After 4s subshell now comes 3d subshell. Each d-subshell can hold a maximum of 10 electrons, so we will use 10 electrons for the 3d subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10. Where, 3d10 indicates that the 3d subshell has 10 electrons. Here, we have used 10 electrons in the 3d subshell, so we have a total of 30 – 10 = 20 electrons left. Use 6 electrons for 4p subshell | Image: Learnool After 3d subshell now comes 4p subshell. Each p-subshell can hold a maximum of 6 electrons, so we will use 6 electrons for the 4p subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6. Where, 4p6 indicates that the 4p subshell has 6 electrons. Here, we have used 6 electrons in the 4p subshell, so we have a total of 20 – 6 = 14 electrons left. Use 2 electrons for 5s subshell | Image: Learnool After 4p subshell now comes 5s subshell. Each s-subshell can hold a maximum of 2 electrons, so we will use 2 electrons for the 5s subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2. Where, 5s2 indicates that the 5s subshell has 2 electrons. Here, we have used 2 electrons in the 5s subshell, so we have a total of 14 – 2 = 12 electrons left. Use 10 electrons for 4d subshell | Image: Learnool After 5s subshell now comes 4d subshell. Each d-subshell can hold a maximum of 10 electrons, so we will use 10 electrons for the 4d subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10. Where, 4d10 indicates that the 4d subshell has 10 electrons. Here, we have used 10 electrons in the 4d subshell, so we have a total of 12 – 10 = 2 electrons left. Use last 2 electrons for 5p subshell | Image: Learnool After 4d subshell now comes 5p subshell. Each p-subshell can hold a maximum of 6 electrons, and we also have only 2 electrons left, so we will use that 2 electrons for the 5p subshell. So the electron configuration will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2. Where, 5p2 indicates that the 5p subshell has 2 electrons. Therefore, the final electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2. And the condensed/abbreviated electron configuration of tin is [Kr] 5s2 4d10 5p2. Where, Kr is krypton First, get periodic table chart with spdf notation Periodic table blocks | Image: Learnool The above image shows periodic table blocks. The 's' in s block represents that all s block elements have their valence electrons in s subshell. Similarly, the 'p' in p block represents that all p block elements have their valence electrons in p subshell. And so on for d block and f block. Second, mark location of tin on periodic table Tin is the p block element located in group 14 and period 5. Hence, mark the location of tin on the periodic table as follows: Mark location of tin on periodic table | Image: Learnool Finally, start writing electron configuration Remember that: each s subshell can hold maximum 2 electrons, each p subshell can hold maximum 6 electrons, each d subshell can hold maximum 10 electrons, and each f subshell can hold maximum 14 electrons. Start writing electron configuration from the very first element (i.e., hydrogen) all the way up to tin. Start from 1s and write till Sn for full electron configuration | Image: Learnool So the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2. Tin Bohr model | Image: Learnool In the above image, 1 represents the 1st electron shell. Similarly, 2 represents the 2nd electron shell, 3 represents the 3rd electron shell, 4 represents the 4th electron shell, and 5 represents the 5th electron shell. The 1st electron shell contains 1s subshell, the 2nd electron shell contains 2s and 2p subshells, the 3rd electron shell contains 3s, 3p, and 3d subshells, the 4th electron shell contains 4s, 4p, and 4d subshells, and the 5th electron shell contains 5s subshell. We know that each s subshell can hold maximum 2 electrons, each p subshell can hold maximum 6 electrons, each d subshell can hold maximum 10 electrons, and each f subshell can hold maximum 14 electrons. Also, we have to make sure that the electron configuration will match the order of aufbau principle (i.e., the 1s subshell is filled first and then 2s, 2p, 3s… and so on). So the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2. Where, 1s2 indicates that the 1s subshell has 2 electrons2s2 indicates that the 2s subshell has 2 electrons2p6 indicates that the 2p subshell has 6 electrons3s2 indicates that the 3s subshell has 2 electrons3p6 indicates that the 3p subshell has 6 electrons4s2 indicates that the 4s subshell has 2 electrons3d10 indicates that the 3d subshell has 10 electrons4p6 indicates that the 4p subshell has 6 electrons5s2 indicates that the 5s subshell has 2 electrons4d10 indicates that the 4d subshell has 10 electrons5p2 indicates that the 5p subshell has 2 electrons Learn how to draw: Tin Bohr model Tin orbital diagram | Image: Learnool The above orbital diagram shows that the 1s subshell has 2 electrons, the 2s subshell has 2 electrons, the 2p subshell has 6 electrons, the 3s subshell has 2 electrons, the 3p subshell has 6 electrons, the 4s subshell has 2 electrons, the 3d subshell has 10 electrons, the 4p subshell has 6 electrons, the 5s subshell has 2 electrons, the 4d subshell has 10 electrons, and the 5p subshell has 2 electrons. So the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2. Learn how to draw: Tin orbital diagram Next: Antimony electron configuration Your feedback matters. Visit our contact page. Tin is the 50th element in the periodic table and the symbol is 'Sn'. Tin has an atomic number of 50, which means that its atom has 50 electrons around its nucleus.The electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2, which means that the first two electrons enter the 1s orbital. Since the 1s orbital can hold only two electrons, the next two will enter the 2s orbital. The next six electrons enter the 2p subshell. The p subshell can hold a maximum of six electrons. So first we put six electrons in the 2p subshell and then the next two electrons in the 3s orbital.Since the 3s is now full, the electrons will move to the 3p subshell, where the next six electrons will enter. The 3p subshell is now full. Consequently, the following two electrons will enter the 4s orbital. Since the 4s orbital is full, the next ten electrons will move into the 3d subshell. The d subshell can hold a maximum of ten electrons. So, the next six electrons will enter the 4p subshell.Since the 4p is full, the next two electrons will move to the 5s orbital. The 5s orbital is now full. Consequently, the next ten electrons will enter the 4d subshell. Since the 4d is full, the remaining two electrons will enter the 5p subshell. Hence, the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.The electron configuration of tin refers to the arrangement of electrons in the tin atom's orbitals. It describes how electrons are distributed among the various atomic orbitals and energy levels, and provides a detailed map of where each electron is likely to be found.To understand the mechanism of tin electron configuration, you must understand two basic things. These are orbits and orbitals. Also, you can arrange electrons in those two ways. In this article, I have discussed all the necessary points to understand the mechanism of tin electron configuration. I hope this will be helpful in your study.Tin atom electron configuration (Bohr model)Scientist Niels Bohr was the first to give an idea of the atom's orbit. He provided a model of the atom in 1913 and provided a complete idea of orbit in that model.The electrons of the atom revolve around the nucleus in a certain circular path. These circular paths are called orbits (shells or energy levels). These orbits are expressed by n. [n = 1,2,3,4 . . . The serial number of the orbit]The name of the first orbit is K, L is the second, M is the third, and N is the name of the fourth orbit. The electron holding capacity of each orbit is 2n2.Shell Number (n)Shell NameElectrons Holding Capacity (2n2)1K22L83M184N32Electron holding capacity of shellsLet, n = 1 for K orbit. So, the maximum electron holding capacity in the K orbit is 2n2 = 2 × 12 = 2 electrons.n = 2, for L orbit. The maximum electron holding capacity in the L orbit is 2n2 = 2 × 22 = 8 electrons.n=3 for M orbit. The maximum electron holding capacity in the M orbit is 2n2 = 2 × 32 = 18 electrons.n=4 for N orbit. The maximum electron holding capacity in N orbit is 2n2 = 2 × 42 = 32 electrons.Therefore, the maximum electron holding capacity in the first shell is two, the second shell is eight and the 3rd shell can have a maximum of eighteen electrons.The atomic number is the number of electrons in that element. The atomic number of tin is 50. That is, the number of electrons in tin is fifty. Therefore, a tin atom will have two electrons in the first shell, eight in the 2nd orbit, and eighteen electrons in the 3rd shell.According to Bohr's formula, the fourth shell will have twenty-two electrons but the fourth shell of tin will have eighteen electrons and the remaining four electrons will be in the fifth shell. Therefore, the order of the number of electrons in each shell of the tin atom is 2, 8, 18, 18, 4.The Bohr atomic model has many limitations. In the Bohr atomic model, the electrons can only be arranged in different shells but the exact position, orbital shape, and spin of the electron cannot be determined.Also, electrons can be arranged correctly from 1 to 18 elements. The electron arrangement of any element with atomic number greater than 18 cannot be accurately determined by the Bohr atomic model following the 2n2 formula. We can overcome all limitations of the Bohr model following the electron configuration through orbital.Atomic energy shells are subdivided into sub-energy levels. These sub-energy levels are also called orbital. The most probable region of electron rotation around the nucleus is called the orbital.The sub-energy levels depend on the azimuthal quantum number. It is expressed by 'l'. The value of 'l' is from 0 to (n – 1). The sub-energy levels are known as s, p, d, and f.Orbit NumberValue of 'l'Number of subshellsNumber of orbitalsSubshell nameElectrons holding capacityElectron configuration10111s21s22012132s2p262s2 2p6301231353s3p3d26103s2 3p6 3d1040123413574s4p4d4f2610144s2 4p6 4d10 4f14Orbital number of the subshellIf n = 1,(n – 1) = (1–1) = 0Therefore, the value of 'l' is 0. So, the sub-energy level is 1s.If n = 2,(n – 1) = (2–1) = 1.Therefore, the value of 'l' is 0, 1. So, the sub-energy levels are 2s, and 2p.If n = 3,(n – 1) = (3–1) = 2.Therefore, the value of 'l' is 0, 1, 2. So, the sub-energy levels are 3s, 3p, and 3d.If n = 4,(n – 1) = (4–1) = 3Therefore, the value of 'l' is 0, 1, 2, 3. So, the sub-energy levels are 4s, 4p, 4d, and 4f.If n = 5,(n – 1) = (n – 5) = 4.Therefore, l = 0,1,2,3,4. The number of sub-shells will be 5 but 4s, 4p, 4d, and 4f in these four subshells it is possible to arrange the electrons of all the elements of the periodic table.Sub-shell nameName sourceValue of 'l'Value of 'm'(0 to ± l)Number of orbital (2l+1)Electrons holding capacity2(2l+1)sSharp0012pPrincipal1−1, 0, +136dDiffuse2−2, −1, 0, +1, +2510fFundamental3−3, −2, −1, 0, +1, +2, +3714Number of electrons in the orbitalThe orbital number of the s-subshell is one, three in the p-subshell, five in the d-subshell, and seven in the f-subshell. Each orbital can have a maximum of two electrons.The sub-energy level 's' can hold a maximum of two electrons, 'p' can hold a maximum of six electrons, 'd' can hold a maximum of ten electrons, and 'f' can hold a maximum of fourteen electrons.Aufbau is a German word, which means building up. The main proponents of this principle are scientists Niels Bohr and Pauli. The Aufbau method is to do electron configuration through the sub-energy level.The Aufbau principle is that the electrons present in the atom will first complete the lowest energy orbital and then gradually continue to complete the higher energy orbital.Electron Configuration Mechanism Through Aufbau PrincipalThe energy of an orbital is calculated from the value of the principal quantum number 'n' and the azimuthal quantum number 'l'. The orbital for which the value of (n + l) is lower is the low energy orbital and the electron will enter that orbital first.OrbitalOrbit (n)Azimuthal quantum number (l)Orbital energy (n + l)3d3254s404Energy of orbitalHere, the energy of 4s orbital is less than that of 3d. So, the electron will enter the 4s orbital first and enter the 3d orbital when the 4s orbital is full. Following the Aufbau principle, the sequence of entry of electrons into orbitals is 1s 2s 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d 6p 7s 5f 6d 7p.Therefore, the complete electron configuration for tin should be written as 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.Note: The unabbreviated electron configuration of tin is [Kr] 4d10 5s2 5p2. When writing an electron configuration, you have to write serially.Tin electron configurationAtoms can jump from one orbital to another orbital in an excited state. This is called quantum jump. The ground-state electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5p2. In the tin ground-state electron configuration, the last electrons of the 5p orbital are located in the 5px and 5py orbitals.We already know that the p-subshell has three orbitals. The orbitals are px, py, and pz and each orbital can have a maximum of two electrons. Then the correct electron configuration of tin in the ground state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5px1 5py1. This electron configuration shows that the last shell of the tin atom has two unpaired electrons. So in this case, the valency of tin is 2.When the tin atom is excited, then the tin atom absorbs energy. As a result, an electron in the 5s orbital jumps to the 5pz orbital. Therefore, the electron configuration of tin(Sn*) in an excited state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s1 5px1 5py1 5pz1. The valency of the element is determined by electron configuration in the excited state. Here, the tin has four unpaired electrons. So, the valency of tin is 4.The electron configuration shows that the last shell of tin has four electrons. Therefore, the valence electrons of tin are four. There are two types of tin ions. The tin atom exhibits Sn2+ and Sn4+ ions. The element that forms a bond by donating electrons is called cation. The tin atom donates two electrons in the 5p orbital to form a tin ion(Sn2+). That is, tin is a cation element.Sn – 2e– → Sn2+Here, the electron configuration of tin ion(Sn2+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2. On the other hand, the tin atom donates two electrons in the 5p orbital and two electrons in the 5s orbital to convert a tin ion(Sn4+).Sn – 4e– → Sn4+The electron configuration of tin ion(Sn4+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10. This electron configuration shows that the tin ion(Sn4+) has four shells and the last shell has eighteen electrons and it achieves a stable electron configuration. Tin atoms exhibit +2 and +4 oxidation states. The oxidation state of the element changes depending on the bond formation. Farhan SadikHi, I'm Farhan Sadik. I've always been captivated by chemistry since my school days and pursued extensive research during college, especially on the periodic table. As a full-time chemistry writer on Valenceelectrons.com, my mission is to share the knowledge I've gained about electron configuration, valence electrons, and atomic properties. I believe that quality education should be accessible to all, and I hope to empower learners worldwide to explore the wonders of chemistry. The Electron configuration of Tin is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5p2. Tin is the chemical element of the periodic table which is in group 14, its atomic number is 50 and its symbol is Sn. Tin has 10 stable isotopes. Cassiterite is its main ore. This element is obtained from the mineral cassiterite in which it occurs as tin dioxide or tin IV oxide. This ore is crushed and enriched in tin dioxide by flotation, then roasted and heated with coke in a reverberatory furnace to obtain the metal. The use of tin began in the Balkans and the Near East around 2000 BC, being used in an alloy with copper to create bronze and giving rise to the famous Bronze Age. The importance of the new alloy with which are made tools and weapons of greater efficiency than those of bone or stone that existed at that time, gave rise in antiquity to an intense trade over long distances with the localities in which there were tin deposits. . Electron configuration of tin The complete Electron configuration of tin is: 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5p2. The abbreviated or simplified electron configuration for this element is [Kr] 4d10 5s2 5s2. Properties of tin Pewter is generally a white metal, although it has an allotropic variant in which its color changes to gray. It has malleability, it oxidizes superficially at room temperature. This effect provides corrosion resistance through passivation, which is why it is used for coating other metals and protecting against corrosion. Pewter is found in many alloys. When a bar of this metal is bent, a characteristic sound is produced which is called the cry of tin, which is the result of the friction of the crystals that are part of it. One of the most unique characteristics of this element is that, under certain thermal conditions, it suffers from what is known as tin plague. Pure tin has two allotropic variants which are: Tin Grey: This is a non-metallic semiconductor powder, with a stable, cubic structure at temperatures below 13.2 degrees Celsius. It is very fragile and its specific gravity is lower than the target. White tin: Metallic, normal, conductor of electricity, its structure is stable and tetragonal. Their temperatures are above 13.2 degrees Celsius. Pewter Uses and Applications It is used to minimize the fragility of the glass. It is used to protect steel, iron and various metals used in the creation of cans. It is used for the creation of tin, bronze and copper alloys. Tin compounds are used in dyes, fungicides, pigments and toothpastes. Pewter is used in alloy with lead to create plates in tubes that have musical organs. In lead alloy, it is useful for soft soldering. Coat the steel. It is used in labels. Pewter is used in corking wine bottles in capsule form. This use spread after the prohibition of lead in food industries. Spain is one of the countries that largely manufacture pewter caps. It is also used in the ceramics industry to create ceramic glazes. This is used to opacify top and bottom. In the case of high, the percentage ratio is higher than in the low temperature. It is used as a filler material for soft soldering with soldering iron, alloyed or pure. APAMLAHarvardVancouverChicagoIEEEElectron Configuration (April 29, 2022) Electron configuration of Tin. Retrieved from Electron configuration of Tin." Electron Configuration - April 29, 2022, Configuration April 20, 2022 Electron configuration of Tin., viewed April 29, 2022,< Electron Configuration - Electron configuration of Tin. [Internet]. [Accessed April 29, 2022]. Available from: Electron configuration of Tin." Electron Configuration - Accessed April 29, 2022. Electron configuration of Tin." Electron Configuration [Online]. Available: . [Accessed: April 29, 2022] Skip to main content Official websites use .gov A .gov website belongs to an official government organization in the United States. Secure .gov websites use HTTPS A lock () or https:// means you've safely connected to the .gov website. Share sensitive information only on official, secure websites. Login to create quiz, word search, matching games, or worksheets. If you are not a registered user register here to login. Beryllium copper is an alloy comprising of copper as the base and 0.5 to 3 % of beryllium. In some cases, other alloying elements like nickel or cobalt are also used. The alloy has a huge demand in innumerable industries due to its high strength in adjunct with non-magnetic and non-sparking properties. Beryllium... Differential scanning calorimetry Definition The term "differential scanning calorimetry" describes an instrument that measures energy directly and allows precise measurements of heat capacity. This technique is widely used to measure the difference in the amount of heat required to raise the temperature... What is Sodium cyanide? It is a poisonous, hygroscopic inorganic compound, which emits an odor of hydrogen cyanide under damp conditions. The high toxicity of the compound is mainly attributed to the presence of cyanide, which has a strong affinity for metals. Sodium cyanide Identification CAS number:... ChemistryLearner is dedicated to provide reliable, accurate and well curated information on chemistry topics for students and researchers. We are constantly adding new articles in our database, so make sure to our our website to your feed reader for regular updates. We write highly researched articles backed with reliable citations and sources to make it easier for readers to cross refer. Respuesta: Una orientación de la gestión gerencial que se centra en el resultado final. La finalidad de la gestión sistemática es una orientación de la gestión gerencial que se centra en el resultado final. Tin is the 50th element in the periodic table and the symbol is 'Sn'. Tin has an atomic number of 50, which means that its atom has 50 electrons around its nucleus.The electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2, which means that the first two electrons enter the 1s orbital. Since the 1s orbital can hold only two electrons, the next two will enter the 2s orbital. The next six electrons enter the 2p subshell. The p subshell can hold a maximum of six electrons. So first we put six electrons in the 2p subshell and then the next two electrons in the 3s orbital.Since the 3s is now full, the electrons will move to the 3p subshell, where the next six electrons will enter. The 3p subshell is now full. Consequently, the following two electrons will enter the 4s orbital. Since the 4s orbital is full, the next ten electrons will move into the 3d subshell. The d subshell can hold a maximum of ten electrons. So, the next six electrons will enter the 4p subshell.Since the 4p is full, the next two electrons will move to the 5s orbital. The 5s orbital is now full. Consequently, the next ten electrons will enter the 4d subshell. Since the 4d is full, the remaining two electrons will enter the 5p subshell. Hence, the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.The electron configuration of tin refers to the arrangement of electrons in the tin atom's orbitals. It describes how electrons are distributed among the various atomic orbitals and energy levels, and provides a detailed map of where each electron is likely to be found.To understand the mechanism of tin electron configuration, you must understand two basic things. These are orbits and orbitals. Also, you can arrange electrons in those two ways. In this article, I have discussed all the necessary points to understand the mechanism of tin electron configuration. I hope this will be helpful in your study.Tin atom electron configuration (Bohr model)Scientist Niels Bohr was the first to give an idea of the atom's orbit. He provided a model of the atom in 1913 and provided a complete idea of orbit in that model.The electrons of the atom revolve around the nucleus in a certain circular path. These circular paths are called orbits (shells or energy levels). These orbits are expressed by n. [n = 1,2,3,4 . . . The serial number of the orbit]The name of the first orbit is K, L is the second, M is the third, and N is the name of the fourth orbit. The electron holding capacity of each orbit is 2n2.Shell Number (n)Shell NameElectrons Holding Capacity (2n2)1K22L83M184N32Electron holding capacity of shellsLet, n = 1 for K orbit. So, the maximum electron holding capacity in the K orbit is 2n2 = 2 × 12 = 2 electrons.n = 2, for L orbit. The maximum electron holding capacity in the L orbit is 2n2 = 2 × 22 = 8 electrons.n=3 for M orbit. The maximum electron holding capacity in the M orbit is 2n2 = 2 × 32 = 18 electrons.n=4 for N orbit. The maximum electron holding capacity in N orbit is 2n2 = 2 × 42 = 32 electrons.Therefore, the maximum electron holding capacity in the first shell is two, the second shell is eight and the 3rd shell can have a maximum of eighteen electrons.The atomic number is the number of electrons in that element. The atomic number of tin is 50. That is, the number of electrons in tin is fifty. Therefore, a tin atom will have two electrons in the first shell, eight in the 2nd orbit, and eighteen electrons in the 3rd shell.According to Bohr's formula, the fourth shell will have twenty-two electrons but the fourth shell of tin will have eighteen electrons and the remaining four electrons will be in the fifth shell. Therefore, the order of the number of electrons in each shell of the tin atom is 2, 8, 18, 18, 4.The Bohr atomic model has many limitations. In the Bohr atomic model, the electrons can only be arranged in different shells but the exact position, orbital shape, and spin of the electron cannot be determined.Also, electrons can be arranged correctly from 1 to 18 elements. The electron arrangement of any element with atomic number greater than 18 cannot be accurately determined by the Bohr atomic model following the 2n2 formula. We can overcome all limitations of the Bohr model following the electron configuration through orbital.Atomic energy shells are subdivided into sub-energy levels. These sub-energy levels are also called orbital. The most probable region of electron rotation around the nucleus is called the orbital.The sub-energy levels depend on the azimuthal quantum number. It is expressed by 'l'. The value of 'l' is from 0 to (n – 1). The sub-energy levels are known as s, p, d, and f.Orbit NumberValue of 'l'Number of subshellsNumber of orbitalsSubshell nameElectrons holding capacityElectron configuration10111s21s22012132s2p262s2 2p6301231353s3p3d26103s2 3p6 3d1040123413574s4p4d4f2610144s2 4p6 4d10 4f14Orbital number of the subshellIf n = 1,(n – 1) = (1–1) = 0Therefore, the value of 'l' is 0. So, the sub-energy level is 1s.If n = 2,(n – 1) = (2–1) = 1.Therefore, the value of 'l' is 0, 1. So, the sub-energy levels are 2s, and 2p.If n = 3,(n – 1) = (3–1) = 2.Therefore, the value of 'l' is 0, 1, 2. So, the sub-energy levels are 3s, 3p, and 3d.If n = 4,(n – 1) = (4–1) = 3Therefore, the value of 'l' is 0, 1, 2, 3. So, the sub-energy levels are 4s, 4p, 4d, and 4f.If n = 5,(n – 1) = (n – 5) = 4.Therefore, l = 0,1,2,3,4. The number of sub-shells will be 5 but 4s, 4p, 4d, and 4f in these four subshells it is possible to arrange the electrons of all the elements of the periodic table.Sub-shell nameName sourceValue of 'l'Value of 'm'(0 to ± l)Number of orbital (2l+1)Electrons holding capacity2(2l+1)sSharp0012pPrincipal1−1, 0, +136dDiffuse2−2, −1, 0, +1, +2510fFundamental3−3, −2, −1, 0, +1, +2, +3714Number of electrons in the orbitalThe orbital number of the s-subshell is one, three in the p-subshell, five in the d-subshell, and seven in the f-subshell. Each orbital can have a maximum of two electrons.The sub-energy level 's' can hold a maximum of two electrons, 'p' can hold a maximum of six electrons, 'd' can hold a maximum of ten electrons, and 'f' can hold a maximum of fourteen electrons.Aufbau is a German word, which means building up. The main proponents of this principle are scientists Niels Bohr and Pauli. The Aufbau method is to do electron configuration through the sub-energy level.The Aufbau principle is that the electrons present in the atom will first complete the lowest energy orbital and then gradually continue to complete the higher energy orbital.Electron Configuration Mechanism Through Aufbau PrincipalThe energy of an orbital is calculated from the value of the principal quantum number 'n' and the azimuthal quantum number 'l'. The orbital for which the value of (n + l) is lower is the low energy orbital and the electron will enter that orbital first.OrbitalOrbit (n)Azimuthal quantum number (l)Orbital energy (n + l)3d3254s404Energy of orbitalHere, the energy of 4s orbital is less than that of 3d. So, the electron will enter the 4s orbital first and enter the 3d orbital when the 4s orbital is full. Following the Aufbau principle, the sequence of entry of electrons into orbitals is 1s 2s 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d 6p 7s 5f 6d 7p.Therefore, the complete electron configuration for tin should be written as 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.Note: The unabbreviated electron configuration of tin is [Kr] 4d10 5s2 5p2. When writing an electron configuration, you have to write serially.Tin electron configurationAtoms can jump from one orbital to another orbital in an excited state. This is called quantum jump. The ground-state electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5p2. In the tin ground-state electron configuration, the last electrons of the 5p orbital are located in the 5px and 5py orbitals.We already know that the p-subshell has three orbitals. The orbitals are px, py, and pz and each orbital can have a maximum of two electrons. Then the correct electron configuration of tin in the ground state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5px1 5py1. This electron configuration shows that the last shell of the tin atom has two unpaired electrons. So in this case, the valency of tin is 2.When the tin atom is excited, then the tin atom absorbs energy. As a result, an electron in the 5s orbital jumps to the 5pz orbital. Therefore, the electron configuration of tin(Sn*) in an excited state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s1 5px1 5py1 5pz1. The valency of the element is determined by electron configuration in the excited state. Here, the tin has four unpaired electrons. So, the valency of tin is 4.The electron configuration shows that the last shell of tin has four electrons. Therefore, the valence electrons of tin are four. There are two types of tin ions. The tin atom exhibits Sn2+ and Sn4+ ions. The element that forms a bond by donating electrons is called cation. The tin atom donates two electrons in the 5p orbital to form a tin ion(Sn2+). That is, tin is a cation element.Sn – 2e– → Sn2+Here, the electron configuration of tin ion(Sn2+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2. On the other hand, the tin atom donates two electrons in the 5p orbital and two electrons in the 5s orbital to convert a tin ion(Sn4+).Sn – 4e– → Sn4+The electron configuration of tin ion(Sn4+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10. This electron configuration shows that the tin ion(Sn4+) has four shells and the last shell has eighteen electrons and it achieves a stable electron configuration. Tin atoms exhibit +2 and +4 oxidation states. The oxidation state of the element changes depending on the bond formation. Farhan SadikHi, I'm Farhan Sadik. I've always been captivated by chemistry since my school days and pursued extensive research during college, especially on the periodic table. As a full-time chemistry writer on Valenceelectrons.com, my mission is to share the knowledge I've gained about electron configuration, valence electrons, and atomic properties. I believe that quality education should be accessible to all, and I hope to empower learners worldwide to explore the wonders of chemistry. Tin is the 50th element in the periodic table and the symbol is 'Sn'. Tin has an atomic number of 50, which means that its atom has 50 electrons around its nucleus.The electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2, which means that the first two electrons enter the 1s orbital. Since the 1s orbital can hold only two electrons, the next two will enter the 2s orbital. The next six electrons enter the 2p subshell. The p subshell can hold a maximum of six electrons. So first we put six electrons in the 2p subshell and then the next two electrons in the 3s orbital.Since the 3s is now full, the electrons will move to the 3p subshell, where the next six electrons will enter. The 3p subshell is now full. Consequently, the following two electrons will enter the 4s orbital. Since the 4s orbital is full, the next ten electrons will move into the 3d subshell. The d subshell can hold a maximum of ten electrons. So, the next six electrons will enter the 4p subshell.Since the 4p is full, the next two electrons will move to the 5s orbital. The 5s orbital is now full. Consequently, the next ten electrons will enter the 4d subshell. Since the 4d is full, the remaining two electrons will enter the 5p subshell. Hence, the electron configuration of tin will be 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.The electron configuration of tin refers to the arrangement of electrons in the tin atom's orbitals. It describes how electrons are distributed among the various atomic orbitals and energy levels, and provides a detailed map of where each electron is likely to be found.To understand the mechanism of tin electron configuration, you must understand two basic things. These are orbits and orbitals. Also, you can arrange electrons in those two ways. In this article, I have discussed all the necessary points to understand the mechanism of tin electron configuration. I hope this will be helpful in your study.Tin atom electron configuration (Bohr model)Scientist Niels Bohr was the first to give an idea of the atom's orbit. He provided a model of the atom in 1913 and provided a complete idea of orbit in that model.The electrons of the atom revolve around the nucleus in a certain circular path. These circular paths are called orbits (shells or energy levels). These orbits are expressed by n. [n = 1,2,3,4 . . . The serial number of the orbit]The name of the first orbit is K, L is the second, M is the third, and N is the name of the fourth orbit. The electron holding capacity of each orbit is 2n2.Shell Number (n)Shell NameElectrons Holding Capacity (2n2)1K22L83M184N32Electron holding capacity of shellsLet, n = 1 for K orbit. So, the maximum electron holding capacity in the K orbit is 2n2 = 2 × 12 = 2 electrons.n = 2, for L orbit. The maximum electron holding capacity in the L orbit is 2n2 = 2 × 22 = 8 electrons.n=3 for M orbit. The maximum electron holding capacity in the M orbit is 2n2 = 2 × 32 = 18 electrons.n=4 for N orbit. The maximum electron holding capacity in N orbit is 2n2 = 2 × 42 = 32 electrons.Therefore, the maximum electron holding capacity in the first shell is two, the second shell is eight and the 3rd shell can have a maximum of eighteen electrons.The atomic number is the number of electrons in that element. The atomic number of tin is 50. That is, the number of electrons in tin is fifty. Therefore, a tin atom will have two electrons in the first shell, eight in the 2nd orbit, and eighteen electrons in the 3rd shell.According to Bohr's formula, the fourth shell will have twenty-two electrons but the fourth shell of tin will have eighteen electrons and the remaining four electrons will be in the fifth shell. Therefore, the order of the number of electrons in each shell of the tin atom is 2, 8, 18, 18, 4.The Bohr atomic model has many limitations. In the Bohr atomic model, the electrons can only be arranged in different shells but the exact position, orbital shape, and spin of the electron cannot be determined.Also, electrons can be arranged correctly from 1 to 18 elements. The electron arrangement of any element with atomic number greater than 18 cannot be accurately determined by the Bohr atomic model following the 2n2 formula. We can overcome all limitations of the Bohr model following the electron configuration through orbital.Atomic energy shells are subdivided into sub-energy levels. These sub-energy levels are also called orbital. The most probable region of electron rotation around the nucleus is called the orbital.The sub-energy levels depend on the azimuthal quantum number. It is expressed by 'l'. The value of 'l' is from 0 to (n – 1). The sub-energy levels are known as s, p, d, and f.Orbit NumberValue of 'l'Number of subshellsNumber of orbitalsSubshell nameElectrons holding capacityElectron configuration10111s21s22012132s2p262s2 2p6301231353s3p3d26103s2 3p6 3d1040123413574s4p4d4f2610144s2 4p6 4d10 4f14Orbital number of the subshellIf n = 1,(n – 1) = (1–1) = 0Therefore, the value of 'l' is 0. So, the sub-energy level is 1s.If n = 2,(n – 1) = (2–1) = 1.Therefore, the value of 'l' is 0, 1. So, the sub-energy levels are 2s, and 2p.If n = 3,(n – 1) = (3–1) = 2.Therefore, the value of 'l' is 0, 1, 2. So, the sub-energy levels are 3s, 3p, and 3d.If n = 4,(n – 1) = (4–1) = 3Therefore, the value of 'l' is 0, 1, 2, 3. So, the sub-energy levels are 4s, 4p, 4d, and 4f.If n = 5,(n – 1) = (n – 5) = 4.Therefore, l = 0,1,2,3,4. The number of sub-shells will be 5 but 4s, 4p, 4d, and 4f in these four subshells it is possible to arrange the electrons of all the elements of the periodic table.Sub-shell nameName sourceValue of 'l'Value of 'm'(0 to ± l)Number of orbital (2l+1)Electrons holding capacity2(2l+1)sSharp0012pPrincipal1−1, 0, +136dDiffuse2−2, −1, 0, +1, +2510fFundamental3−3, −2, −1, 0, +1, +2, +3714Number of electrons in the orbitalThe orbital number of the s-subshell is one, three in the p-subshell, five in the d-subshell, and seven in the f-subshell. Each orbital can have a maximum of two electrons.The sub-energy level 's' can hold a maximum of two electrons, 'p' can hold a maximum of six electrons, 'd' can hold a maximum of ten electrons, and 'f' can hold a maximum of fourteen electrons.Aufbau is a German word, which means building up. The main proponents of this principle are scientists Niels Bohr and Pauli. The Aufbau method is to do electron configuration through the sub-energy level.The Aufbau principle is that the electrons present in the atom will first complete the lowest energy orbital and then gradually continue to complete the higher energy orbital.Electron Configuration Mechanism Through Aufbau PrincipalThe energy of an orbital is calculated from the value of the principal quantum number 'n' and the azimuthal quantum number 'l'. The orbital for which the value of (n + l) is lower is the low energy orbital and the electron will enter that orbital first.OrbitalOrbit (n)Azimuthal quantum number (l)Orbital energy (n + l)3d3254s404Energy of orbitalHere, the energy of 4s orbital is less than that of 3d. So, the electron will enter the 4s orbital first and enter the 3d orbital when the 4s orbital is full. Following the Aufbau principle, the sequence of entry of electrons into orbitals is 1s 2s 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d 6p 7s 5f 6d 7p.Therefore, the complete electron configuration for tin should be written as 1s2 2s2 2p6 3s2 3p6 4s2 3d10 4p6 5s2 4d10 5p2.Note: The unabbreviated electron configuration of tin is [Kr] 4d10 5s2 5p2. When writing an electron configuration, you have to write serially.Tin electron configurationAtoms can jump from one orbital to another orbital in an excited state. This is called quantum jump. The ground-state electron configuration of tin is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5p2. In the tin ground-state electron configuration, the last electrons of the 5p orbital are located in the 5px and 5py orbitals.We already know that the p-subshell has three orbitals. The orbitals are px, py, and pz and each orbital can have a maximum of two electrons. Then the correct electron configuration of tin in the ground state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2 5px1 5py1. This electron configuration shows that the last shell of the tin atom has two unpaired electrons. So in this case, the valency of tin is 2.When the tin atom is excited, then the tin atom absorbs energy. As a result, an electron in the 5s orbital jumps to the 5pz orbital. Therefore, the electron configuration of tin(Sn*) in an excited state will be 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s1 5px1 5py1 5pz1. The valency of the element is determined by electron configuration in the excited state. Here, the tin has four unpaired electrons. So, the valency of tin is 4.The electron configuration shows that the last shell of tin has four electrons. Therefore, the valence electrons of tin are four. There are two types of tin ions. The tin atom exhibits Sn2+ and Sn4+ ions. The element that forms a bond by donating electrons is called cation. The tin atom donates two electrons in the 5p orbital to form a tin ion(Sn2+). That is, tin is a cation element.Sn – 2e– → Sn2+Here, the electron configuration of tin ion(Sn2+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10 5s2. On the other hand, the tin atom donates two electrons in the 5p orbital and two electrons in the 5s orbital to convert a tin ion(Sn4+).Sn – 4e– → Sn4+The electron configuration of tin ion(Sn4+) is 1s2 2s2 2p6 3s2 3p6 3d10 4s2 4p6 4d10. This electron configuration shows that the tin ion(Sn4+) has four shells and the last shell has eighteen electrons and it achieves a stable electron configuration. Tin atoms exhibit +2 and +4 oxidation states. The oxidation state of the element changes depending on the bond formation. Farhan SadikHi, I'm Farhan Sadik. I've always been captivated by chemistry since my school days and pursued extensive research during college, especially on the periodic table. As a full-time chemistry writer on Valenceelectrons.com, my mission is to share the knowledge I've gained about electron configuration, valence electrons, and atomic properties. I believe that quality education should be accessible to all, and I hope to empower learners worldwide to explore the wonders of chemistry.