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Pronounced ZEE-not, this element is a gas used primarily in mild manufacturing. Xenon is one of the noble gases and is odorous, colorless, tasteless and chemically non-reactive. While it is not toxic on its own, its compounds are strong oxidized agents that are highly toxic. Only the facts the Jefferson National Linear Accelerator Laboratory has are the characteristics of helium: Atomic number: 54Atomic weight: 131.293 Boiling point: 165.03 K (-108.12°C or -162.62°F)Melting point: 161.36 K (-162.62°F)Melting point: 161.36 K (-162.62°F)F)Melting point: 161.36 K (-162.62°F)F)Melting point: 161.36 K (-162.62°F)F)Melting point: 161.36 K (-162.62°F)F)Melting point: 161.36 K (-162.62°F)F)Phase at room temperature: GasDensity: 0.005887 grams per cubic centimeter classification: Non-metal Period number: 5Group number: 18Group name: Noble GasElectron configuration and elementary properties of xenon. (Image credit: Greg Robson/Creative Commons, Andrei Marincas Shutterstock) History Xenon was discovered by Scottish chemist William Ramsay and English chemist Morris Travers in July 1898 at University College London. It wasn't their first discovery. The pair had already extracted argon, neon and krypton from liquid air. Their discovery arose when a wealthy industry expert, Ludwig Mond, gifted the team a new liquid air machine. With the new machine, they extracted more krypton from liquid air. Then they repeatedly distilled the krypton and isolated a heavier gas. Ramsay and Travers examined the heavier gas in a vacuum tube and saw it radiated a beautiful blue glow. They categorized the new gas as inert and called it xenon, derived from the Greek *xenos*, which means stranger. In 1962, however, Neil Bartlett proved that xenon was not in fact inert. This can cause reactions and compounds. He proved it through a fluorine derivative. Since then, more than 100 xenon compounds have been made, according to the Royal Society of Chemistry. Natural xenon has nine stable isotopes and 20 unstable isotopes. Some compounds that can be formed with xenon include difluoride, xenon deuterates, xenon trioxide, sodium perxenate, xenon hydrate, tetrafluoride and hexafluoride. Another interesting compound is a metal xenon created by using massive amounts of pressure. BronzeXenon is a rare gas found in Earth's atmosphere to the extent of about one part in 20 million, according to the Los Alamos National Laboratory. This makes it very rare. It was also found in Mars' atmosphere at 0.08 ppm. This noble gas can also be found on Earth. Some mineral sources exude xenon. Companies obtain the gas for commercial use of industrial plants that extract the gas from liquid air. Xenon can also be found in the earth. For a long time, scientific suspects that 90 percent more of the gas should be found in Earth's atmosphere, based on their knowledge of other noble gases. The missing xenon paradox is a long question, said Yanming Ma, a compilation physicist and chemist at Jilin University in Changchun, China. [From: Missing' Gas found in the earth's core]. Eventually, scientists, including Mom, found evidence the missing gas can be found at the earth's core. The extreme temperatures and pressures that are in Earth's core can cause xenon to bind with iron and nickel located at the core, storing the gas there. We hope future high-pressure experiments can be performed to confirm our forecasts, Mom said. Use xenon creates a blue or lavender glow when subject to an electrical discharge. Lamps that xenon use alleviates better than conventional lights. For example, syrups lamps, photographic flash lamps, high-intensity arc lamps for movement photo projection, some lamps used for deep-seal observation, bacterial lamps, sunbed lamps and high-pressure arc all used this gas. In fact, you probably see xenon lamps on a regular basis. Some vehicle headlights use xenon. If you see headlights that give off a soft blue glow, they're probably made with xenon. The gas also has other uses. It is used in nuclear energy plants and for filling television and radio tubes. Silicon micro processors are etched with xenon difluoride. Xenon ion propulsive systems hold some satellites and other spacecraft in orbit. Xenon is even used to manufacture a drug called 5-fluorouracil, which is used to treat certain types of cancer, according to the Royal Society of Chemistry. Current research There are several studies that focus on xenon. The Xenon Dark Matter Project, for example, is experimenting with a liquid xenon detector to search for dark matter. Dark matter is described as an invisible glue that holds the universe together. In this experiment, liquid xenon is placed in a time projection room. When the particles in the room act in a way they should not be a sign of dark matter interacting with the particle. The Great Underground Xenon (LUX) collaboration is another, similar experiment. This dark matter detector also uses liquid xenon. Although the project found nothing, the research has resurfaced ideas about dark matter. Who knew? Radioactive iodine-131 can expire in stable xenon, as it did in Fukushima. Xenon isn't the only noble gas. Neon, argon, krypton, helium and radon are also noble gases. Like helium, you can fill balloons with xenon, but it is very expensive and the balloon becomes very heavy because the gas is so dense. An average balloon can hold around 40 lbs. (18.1 kilograms) of xenon, according to an experiment by the Royal Society of Chemistry. Xenon atoms added liquid helium is used to observe quantum tornadoes. Additional resources Xenon vapor radiates a distinctive blue glow in a discharge lamp. (Hi-Res Images of Chemical Elements) Xenon is atomic number 54 with element symbol Xe. Xenon is the chemical element with atomic number 54 and element symbol Xe. The element is a noble gas, so it is inert, colorless, odorless, flavorless, and non-toxic. Xenon is known for its use in high-power lamps. Here's a collection of interesting xenon facts, along with the history of its discovery, uses, and sources. Xenon Element FactsXenon Electron Electron XenonAtomic Number: 54Element Symbol: XeAppearance: Colorless Gas Group: Group 18 (noble gas)Period: Period 5Block: p-block Element Family: Noble GasAtomic Mass: 131.293(6)Electron configuration: [Kr] 4d10 5s2 5p6Electrons per Shell: 2, 2, 2, 2, 8, 18, 18, 8Discovery: William Ramsay and Morris Travers (1898)Name Origin: Greek *xenos*, meaning stranger historical of DiscoveryScottish chemistry William Ramsay and English chemist Morris Travers discovered xenon in September 1898. They had already discovered the noble gases of krypton and neon, using a liquid air machine donated to them by industrialist Ludwig Mond. The obtained xenon by evaporating liquid air and examining the remains. When they placed the gas in a vacuum tube, the observation observed its beautiful blue glow. Ramsay proposed the new element's name, from the Greek word *xenos*, which means strange. Ramsay describes xenon as a stranger in the sample of liquid air. Xenon IsotopesNatural xenon consists of seven stable isotopes: Xe-126, Xe-128, Xe-129, Xe-130, Xe-131, Xe-132 and Xe-134. Although Xe-126 and Xe-134 theoretically undergo double beta decay, it has never been observed. More than 40 radioactive isotopes have been described. The longest-lived radioactive isotope is Xe-124, which has a half-life of 1.8×10^{22} yr. Biological role and ToxicityElemental xenon is non-toxic and serves no biological role. But xenon is soluble in blood and crosses the blood-brain barrier, which acts as an anaesthetic. It is possible to be weakened by xenon as it is heavier than oxygen, although it is possible to inhale a xenon-oxygen mixture. Xenon compounds, especially oxygen-xenon compounds, can be toxic and explosive. Sources of XenonXenon is a rare gas in Earth's atmosphere, present at a concentration of about 1 part per 11.5 million (0.087 parts per million). Although rare, the best source of the element extraction is from liquid air. Xenon also occurs in the Martian atmosphere at about the same concentration. The element is found in the sun, meteorites, and Jupiter. For a long time, scientists thought the atmosphere was the only source of xenon on Earth, but the concentration in the air did not match the amount predicted for the planet. Researchers discovered the gas is emitted by some mineral sources, so xenon also exists within the Earth. It can be found in the so-called missing xenon in the Earth's core, possibly bound to iron and nickel. Xenon UsesXenon is used in gas-discharge lamps, including photography flashes, auto headlamps, strobes, and bacterial lamps (because the spectrum includes a strong ultraviolet component). It is used in film projectors and high-end flashlights because its spectrum is close to that of natural sunlight. It is used at night vision systems because of its near-infrared emission. A mixture of xenon and neon is a component of plasma. The first excimer laser uses a xenon dimer (Xe₂). Xenon is a popular element for various types of lasers. In medicine, xenon is a neuroprotector, and cardio protector. Used in sports doping to increase red blood cell production and performance. The isotope Xe-133 is used in single photon emission computer tomography, while Xe-129 is used as a contrast agent for magnetic resonance imaging (MRI). Xenon chlorides are used for some dermatology procedures. Xenon is also used in nuclear magnetic resonance (NMR) to help surface characterization. It is used in bubble rooms, calorimeters, and as an ion propulsion system. Xenon CompoundsNoble gases are relatively inert, but they form some compounds. Xenon hexafluoroplatinate was the first noble gas compound ever synthesized. More than 80 xenon compounds are known, including chlorides, fluorides, oxides, nitrates, and metal complexes. Physical DataDensity (at STP): 5.894 g / L Melting Point: 161.40 K (-111.75 °C, In 169.15 °F) Boiling point: 165.051 K (-108.099 °C, -162.578 °F) Triple Point: 161.405 K, 81.77 kPa CCC: 289.733 K, 5.842 MPa State at 20°C: gas heat of Fusion: 2.27 kJ/mol Heat of Evaporation: 12.64 kJ/mol Thermal Conductivity: 21.01 J/mol·K Crystal Structure: face-centered cubic (fcc) Magnetic Order: Diamagnetic Atom DataCovalent Radius: 140±9 pm Van der Waals Radius: 216 pm Ionization Energy: 1170.4 kJ/mol 2nd Ionization Energy: 046.4 kJ/mol 3rd Ionization Energy: 3099.4 kJ/mol Common Oxidation State: Usually 0, but can be +1, +2, +4, +6, +8Fun Xenon FactsBefore xenon is more dense than air, it can be used to produce a profound voice (the opposite of helium). However, it is not often used for this purpose because xenon is an anaesthetic. Similarly, if you fill a balloon with xenon gas, it will sink on the floor. While xenon gas, liquid, and solid are colorless, there is a metal solid state of the element that appears blue. Nuclear fission (as of the Fukushima reactor) can produce the radioisotope-135. Vitamin-135 undergoes beta decay to produce the radioisotope xenon-135. Reference Bartlett, Neil (2003). The Noble Gases. Chemical & Engineering News. American Chemical Association. 81 (36): 32–34. doi:10.1021/cen-v081n036.p032Brock, David S.; Schröder (2011). Synthesis of the Missing Oxide of Xenon, XeO₂, and its Implications for Earth's Missing Xenon. J. Am. Chem. Soc. 2011, 133, 16, 6265–6269. doi:10.1021/ja110618g Greenwood, Norman N.; In 1997 Die Burger and Volksblad founded. Chemistry of the Elements (2nd ed.). Butterworth-Heinemann. Michael McCarthy et al. (2016). Atomic weights of the elements 2013 (IUPAC Technical Report). Pure and Applied Chemistry. 88 (3): 265–91. doi:10.1515/pac-2015-0305 doi:10.1515/pac-2015-0305

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