• Hydrogen, chemical element that exists as a gas at room temperature. When hydrogen gas burns in air, it forms water. French chemist Antoine Lavoisier named hydrogen from the Greek words for "water former." • Hydrogen has the smallest atoms of any element. A hydrogen atom contains one proton, and only one electron . The proton is the center, or nucleus, of the hydrogen atom, and the electron travels around the nucleus. • Pure hydrogen exists as hydrogen gas, in which pairs of hydrogen atoms bond together to make molecules.