***Chemistry***

**18: Representative Metals, Metalloids, and Nonmetals**

**18.5: Occurrence, Preparation, and Compounds of Hydrogen**

51. Why does hydrogen not exhibit an oxidation state of 1– when bonded to nonmetals?

Solution

The electronegativity of the nonmetals is greater than that of hydrogen. Thus, the negative charge is better represented on the nonmetal, which has the greater tendency to attract electrons in the bond to itself.

53. In drawing Lewis structures, we learn that a hydrogen atom forms only one bond in a covalent compound. Why?

Solution

Hydrogen has only one orbital with which to bond to other atoms. Consequently, only one two-electron bond can form.

55. What mass of hydrogen gas results from the reaction of 8.5 g of KH with water?



Solution



molar mass KH = 40.10624 g/mol

molar mass H2 = 2.01588 g/mol



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