Answer on Question #50275, Chemistry, Inorganic Chemistry

1. 'Na' is a reductant, 
Na - Na^+ + e^-
but can it act as an oxidant to become Na^-? Is it stable?

2. Na^{5+}, Na^{4+}, Na^{3+}, Na^{2+}, are all possible Oxidation number....... but do all exist in real? Does it happens in the case of Halogens?

Answer:

1. Table salt, or sodium chloride Na^+Cl^-, sodium positive charge is balanced by a negatively charged ion in the empirical formula for this ionic compound. The traditional explanation for this phenomenon is that the loss of one electron from elemental sodium to produce a cation with a single positive charge produces a stable closed-shell electron configuration. Sodium was thought to always form singly charged cations until the discovery of alkalides and the same arguments apply to the remainder of the alkali metals. A typical alkalide is the sodium natride salt [Na(2,2,2-crypt)]^+Na^-. This salt contains both Na^+ and Na^- . The cryptand isolates and stabilizes the Na^+, preventing its reduction by the Na^- . Dimers of cationic and anionic sodium have also been observed, as has an H^-Na^- salt known as "inverse sodium hydride".

2. Na^{5+}, Na^{4+}, Na^{3+}, Na^{2+}, are all possible oxidation numbers but doesn’t exist in real. In case of Halogens it happens with all except of Fluorine, and quite stable (chlorine as an example): Cl^{+1}, Cl^{+3}, Cl^{+5}, Cl^{+7}.