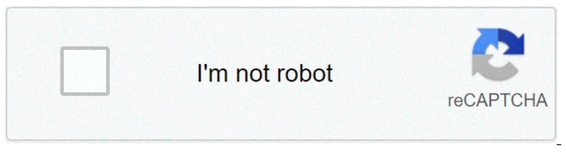

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Oxidation and reduction

Warning: Can only detect less than 5000 charactersAn ion mg2 +. MG MG2 + + 2 E- and, each O2 molecule earns four electrons to form a couple of o2s. O2 + 4 E-2 O2- Become the electrons are not created nor-created nor destroyed in a chemical reaction, oxidation and reduction are connected. It is impossible to have one without the other, as shown in the figure below. The role of oxidation numbers in oxidation reduction reactions that chemists eventually extended the idea of oxidation and reduction of reactions that do not formally carry out the transfer of electrons. Consider the Warning: Can only detect less than 5000 charactersAn oxidizing agent (CUE). The second reaction converts an oxidizing agent (CUE) into a reducing agent (CU). Each reducing agent is therefore connected or coupled, to a conjugated oxidizing agent and vice versa. Whenever a reducing agent loses electrons, form an oxidizing agent that could get electrons if the reaction was inverted. Vice versa, whenever an oxidizing agent earns electrons, electrons, It forms a reducing agent that could lose electrons if the reaction went to the opposite direction. The idea that oxidizing agents and reducing agents are connected, or coupled, is the reason why conjugated oxidizing agents and reducing agents are called. The conjugate comes from the latin stem meaning "to join". It is then used to describe linked or coupled things, such as oxidizing agents and reducing agents. The main group metals are all reducing agents. They tend to be "strong" reducing agents. Metals active in the IA group, for example, giving up the best electrons of any other element in the periodic table. The fact that an active metal as sodium is a strong reducing agent should tell us something about the relative strength of the na + ion as an oxidizing agent. If sodium metal is relatively good in giving electrons, na + ions must be unusually negative in collecting electrons. If na is a strong reducing agent, Ion Na + must be a weak oxidizing agent. Conversely, if O2 has a very high affinity for electrons that is unusually good to accept them from other elements, it should be able to cling to these electrons once it collects them. In other words, if O2 is a strong oxidizing agent, the O2-ion must be a weak reducing agent. In general, the relationship between the oxidizing agents and conjugated reducers can be described as follows. Every strong reduction agent (like NA) has a weak conjugate oxidizing agent (such as Na + Ion). Every strong oxidizing agent (such as O2) has a weak reducing agent conjugated (like the O2- Ion). The relative strength of metals as reducing agents can determine the relative strengths of a pair of metals as reducing agents causing if a reaction occurs when one of these metals is mixed with one salt of the other. Consider the relative strength of iron and aluminum, for example. Nothing happens when we mix in aluminum metal powder with iron oxide (iii). If we position this mixture in a crucible, however, and obtain the reaction started by applying a small heat, a vigorous reaction occurs to give aluminum oxide and melted melted metal. 2 AL (s) + fe2o3 (s) al2o3 (s) + 2 fe (l) Assigning the oxidation numbers, we can choose the oxidation and reduction of the reaction. Aluminum is oxidized to AL2O3 in this reaction, which means that FE2O3 must be the oxidizing agent. Vice versa, FE2O3 is reduced to iron metal, which means that aluminum must be the reducing agent. Because a reducing agent is always transformed into his oxidizing agent combined in a reaction to reduce oxidation, the products of this reaction include a new oxidizing agent (AL2O3) and a new reducing agent (FE). Because the reaction proceeds in this direction, it seems reasonable to assume that the starting materials contain the strongest reducing agent and the strongest oxidant agent. In other words, if the aluminum reduces FE2O3 to form AL2O3 and the iron metal, aluminum must be a stronger reducing agent of the iron. We can conclude from the fact that aluminum cannot reduce sodium chloride to form sodium metal that the starting materials in this reaction are the weaker oxidizing agent and the weakest reducing agent. We can test this hypothesis by asking: what happens when we try to perform the reaction in the opposite direction? (The metal sodium is strong enough to reduce an aluminum salt to aluminum metal?) When this reaction is performed, we discover that the sodium metal can, in fact, reduce aluminum chloride to aluminum metal and chloride of Sodium when the reaction is performed at hot temperatures enough to dissolve the reagents. 3 NA (L) + ALCL3 (L) 3 NACL (L) + AL (L) If sodium is strong enough to reduce AL3 + salts for aluminum metal and aluminum is strong enough to reduce salts FE3 + For iron iron, the relative strengths of these reducing agents can be summarized as follows. NA> AL> FE PRACTICE Problem 4: Use the following equations to determine the relative strengths of sodium, magnesium, aluminum and calcium metal as reducing agents. 2 NA + MGCL22 NACL + MG AL + MGBR2 CA + MGI2 CAI2 + MG CA + 2 NACL Click here to check the response to practice Problem 4 4 oxidation and reduction half equations. oxidation and reduction reaction. oxidation and reduction examples. oxidation and reduction class 10. oxidation and reduction definition. oxidation and reduction difference. oxidation and reduction in terms of electrons. oxidation and reduction in hindi