

## Answer on Question #69255, Chemistry, General Chemistry

Will a reaction occur spontaneously when the chemicals are put in contact with each other? If yes, balance.

Al and  $\text{Ca}^{+2}$

$\text{Fe}^{+3}$  and Zn

HCl and Ag

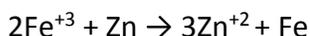
$\text{H}_2\text{SO}_4$  and K

$\text{Na}^{+1}$  and  $\text{Fe}^{+2}$

### Solution:

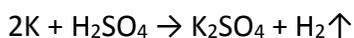
1) Al and  $\text{Ca}^{+2}$ . This reaction is impossible because Ca is more active than Al, according to the Metal Activity Series and its standard electrode potentials. That's why Al cannot replace  $\text{Ca}^{+2}$  from its salt.

2)  $\text{Fe}^{+3}$  and Zn. This reaction is possible because Zn is more active than Fe, according to the Metal Activity Series and its standard electrode potentials. That's why Zn can replace  $\text{Fe}^{+3}$  from its salt:

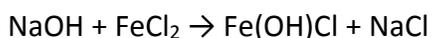


3) HCl and Ag. This reaction is impossible because Ag is situated after H, according to the Metal Activity Series. That's why Ag cannot replace  $\text{H}^+$  from this acid.

4)  $\text{H}_2\text{SO}_4$  and K. This reaction is possible because K is situated before H, according to the Metal Activity Series. That's why K can replace  $\text{H}^+$  from this acid:



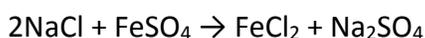
5)  $\text{Na}^{+1}$  and  $\text{Fe}^{+2}$ . For example, if we have reaction between sodium hydroxide NaOH and iron (II) chloride, it means between base and salt, so this reaction is possible:



Or:



Or if we have reaction between two different salts such as:



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