EXCLUSION OF METAL ATOMS FROM THEIR SALTS WITH ATOMS OF HYDROGEN: THE ROLE OF THE REACTIONS IN CHAIN PROCESSES

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It is shown by means of optical spectra that the interaction of H atoms with solid salts (NaCl, NaF, Na_2CO_3, $Na_2B_4O_7$, Na_2SO_4, $NaNO_3$, KCl, KBr, CsJ, $CaCl_2$, CaF_2) leads to the exclusion of free radicals (CaCl $A^1P_{1/2}$, B^2S^+ and CaF A^2P) and metal atoms in excited and ground states into gas phase. Concentrations of ground state Na atoms over NaCl surface amount to 10^9 -10^{11} cm^{-3} in H atoms flow and in $2H_2$+O_2 flame at 1 and 6 Torr at 770K correspondingly. Concentrations of Na $^2P_{3/2}$ amount to $\approx 5.10^6$ cm^{-3}. Metallization of NaCl surface on treatment with rarified flame of H_2 combustion is detected as well. Both participation of metal atoms in combustion and the change in the composition and properties of the surface markedly influence on the features of chain combustion by the example of H_2 + O_2 reaction.