

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, Na₂CO₃, Na₂B₄O₇, Na₂SO₄, NaNO₃, KCl, KBr, CsJ, CaCl₂, CaF₂) leads to the exclusion of free radicals (CaCl A¹P_{1/2}, B²S⁺ and CaF A²P) and metal atoms in excited and ground states into gas phase. Concentrations of ground state Na atoms over NaCl surface amount to 10⁹ - 10¹¹ cm⁻³ in H atoms flow and in 2H₂+O₂ flame at 1 and 6 Torr at 770K correspondingly. Concentrations of Na ²P_{3/2} amount to ≈ 5.10⁶ cm⁻³. Metallization of NaCl surface on treatment with rarified flame of H₂ 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 H₂ + O₂ reaction.