INFLUENCE OF CHEMICALLY ACTIVE ADDITIVES ON EMISSION SPECTRA OF THE FLAMES OF HYDROGEN AND DEUTERIUM OXIDATION IN NEAR IR REGION

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Band system in the region 852 − 880 nm and bands 670 and 846 nm over pressures 0.1 − 1 atm in the flames of mixtures of hydrogen with oxygen and air has been detected. The system is assigned to overtone transitions of H_2O_2 $(3\nu_1 + \sigma)$ correspondingly arising from the reaction of $HO_2 + HO_2 - H_2O_2^v + O_2 + 33.5$ kcal/mole. The bands 670 and 846 nm are assigned to overtone transitions of HO_2 radical $(4\nu_1 + \sigma)$ and $(3\nu_1 + \sigma)$ correspondingly arising from the reaction of $H + O_2(+M) - HO_2(+M) + 44$ kcal/mole. By this means the extent of energy of these elementary processes is located in vibrational degrees of freedom of products. It has been detected that HO_2 radicals occur originally in overtone-excited states in combustion both of hydrogen and deuterium in the presence of small additives of propylene as an inhibitor.