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UV Discharge Lamp on Distilled Water Vapor SVETLANA AVTAEVA, Kyrgyz-Russian Slavic University, ANDRIJ GENERAL, Institute of Electron Physics NAS Ukraine — Recently interest in sources of ultra-violet (UV) radiation in a wavelength range of 200-400 nm has increased. Therefore we have created a source of spontaneous, incoherent UV radiation on distilled water vapor excited by the low-pressure capacitive discharge (1 Torr). Spectral, temporary and energy characteristics of the spontaneous UV radiation source have been experimentally studied. In addition the electron energy distribution function (EEDF), the mean electron energy, electron transport coefficients, rate constants of elastic and inelastic electron collisions with atoms and electron energy losses have been theoretically calculated with help of the program Bolsig+. Results of the theoretical calculation are used for optimizing radiative characteristics of the radiation source. Advantages of the created lamp based on the low-pressure capacitive discharge on water vapor are: 1) inexpensive and ecologically safe working medium on the basis of hydroxyl radicals; 2) absence of electrodes in a gas-discharge zone that allows to hope for significant increasing their useful operation resource, in comparison with lamps of glow or other discharges; 3) simplicity of the lamp construction.

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