

HYDROGEN BALMER SPECTRAL LINES IN SPECTROSCOPY OF UNDERWATER ELECTRIC SPARK DISCHARGE PLASMA

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The behavior of the Balmer series spectral lines profiles in the underwater electric spark discharge plasma between copper granules is investigated. Specially developed pulse power source is used to initiate a discharge between copper granules immersed into the deionized water. Typical values of voltage are of [40, 200] V, current is up to 150 A and pulse frequency is in the range of [0.2, 2] kHz. The voltage, applied to electrodes, caused a current flow along the chain of closely arranged granules in the stochastic switching mode. Optical emission spectroscopy methods are used for diagnostics of such discharge plasma. Profiles of H α and H β hydrogen lines, exposed to the Stark mechanism of spectral lines' broadening, are used to determine electron density. The Boltzmann plot of copper lines' intensities are used to determine the plasma temperature additionally.