

Development of Nonthermal Bioplasma Source Applicable to Human Liquid Fluids

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A nonthermal bioplasma source was developed for application to human liquid fluids by making use of nano-size tungsten tips. Characteristics of the plasma source are investigated. Here we have used the AC voltage system. The bioplasma source generated by a tungsten tip with quartz tube and ground electrode is a low-temperature plasma without making any noticeable damage to cells at a low power operation. The breakdown voltage and current signals are measured by high voltage probe (Tektronix P6015A) and current probe (P6021). Variation of breakdown temperature near the tip electrode is larger than that in the neighborhood of ground electrode. Bubble formation during discharge has been recorded and investigated by using the high speed camera. The existence and behavior of hydroxyl and superoxide radicals are detected and measured by spectrometers. The electrical and optical properties of breakdown characteristics are also investigated.

Keywords: Bioplasma, Plasma Bioscience, Plasma Physics