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## GENERATOR OF HIGH-VOLTAGE NANOSECOND PULSES WITH REPETITION RATE MORE THAN 2000 PULSES PER SECOND FOR WATER PURIFICATION BY THE DISCHARGES IN GAS BUBBLES

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### Abstract

**Purpose.** Purpose of this work is to create generator of high-voltage nanosecond pulses capable of operating on a load in the form of a layer of water with gas bubbles at a pulse repetition rate of more than 2000 pulses per second, and experimentally investigate with its aid the characteristics of nanosecond discharges in gas bubbles for water purification. **Met**

### **hodology**

. Generator of nanosecond pulses was created on the basis of the Tesla transformer scheme.

*We used multi-gap spark discharger to peak the front of high-voltage pulses.*

**Results.**

*Characteristics of high-voltage nanosecond discharges in gas bubbles in water are experimentally studied using a nanosecond pulse generator. These discharges allowed reducing the concentration of ammonia by 37% in a solution of ammonium nitrate in water during its purification.*

**Originality**

*. Multi-gap spark discharger provides a pulse repetition rate of more than 2000 pulse/s. Load of the generator was layer of water with gas bubbles with characteristic dimensions of 1-4 cm above it in the reactor. Voltage pulses with amplitude up to 30 kV, current pulses with amplitude of up to 35 A with characteristic durations of 60 ns and front durations of  $\approx 10$  ns are obtained in load. Shape of the pulses is close to the two-exponential waveform with superimposed oscillations.*

**Practical value**

*. Nanosecond discharges obtained experimentally in gas bubbles in water with voltage amplitude of several tens of kilovolts and the amplitude of current pulses in discharges of tens and more amperes open the prospect of purification and microbiological disinfection of water with such discharges with reduced specific energy costs in comparison with known methods. References 9, figures 4.*

**Key words:** generator, high - voltage nanosecond pulse, discharge into gas bubble, water purification, multi gap spark discharger, peaking capacitance, reactor.

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