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Experimental investigation of halothane as a new halide donor for nuclear pumped excimer laser

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The Information about experimental investigation of XeBr* excimer molecule luminescence under e-beam and 235U fission fragment excitation is reproduced. The RADAN-220 compact pulse electron accelerator with 2 ns pulse duration and medium energy of electrons about 150 keV was used as e-beam source. The fission fragments were produced from 235U, which was applied on the inner wall of laser element of "STAND-B" experimental reactor-laser facility. The fissions were induced by neutrons from pulse aperiodic reactor BARS-6, with pulse duration 100 μs. The new gas mixture was used in research with halothane C2HBrClF3 as a bromine donor. Halothane or Fluothane is a colorless liquid with molecular weight of 197,381 g/mol, boiling temperature of 50.2 °C and vapor pressure of 243 Torr. It is used in medicine as an anaesthesia mixtures compound. Halothane is less chemically aggressive in comparison with other compounds that are usually used as a bromine donor in XeBr excimer molecule investigations. This report will contain detailed information about experimental facilities and experiments performed to investigate halothane as a new bromine donor. In addition, some experimental data such as luminescence spectrum of Ar-Xe-C2HBrClF3 gas mixture (one of them illustrated on the Image) will be reported. This experimental data makes it possible to calculate quenching rate and optimal partial pressure for halothane as a new bromine donor. The result will make it possible to continue this research and use new gas mixture with halothane to obtain laser generation on B-X transition (282 nm) of XeBr excimer molecule under nuclear excitation.

Biography

Anton Podkopaev is a young researcher in the field of nuclear pumped lasers from the Institute for Physics and Power Engineering named after A. I. Leypunsky (IPPE). Today he is studying in IATE MEPHI as a PhD student, and making his experimental work in IPPE. His PhD research is focused on investigation of new excimer laser gas media for nuclear pumped lasers.

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