

## THE HIGH-POWER PULSED BEAMS SOURCE WITH TUNABLE OPERATION MODE

*ALEXANDER NASHILEVSKIY, GENNADY KANAEV, VITALIY EZHOV,  
VITALIY SHAMANIN AND GENNADY REMNEV*

*National Research Tomsk Polytechnic University, Russia  
naw@tpu.ru*

The electron and ion pulsed accelerator design is discussed in this report. The powerful high-voltage pulse generator of accelerator and the vacuum bushing insulator allow changing the polarity of output voltage. The low inductance matching transformer provides an increase of 4 times of the DFL output impedance. The generator based on a high voltage pulse transformer and pseudospark switch is applied to DFL charging.

The high impedance magnetically insulated focusing diode with Br magnetic field and the «passive» anode was used to realization of the ion beam generation mode.

The plasma formed on the surface of anode caused by electrical breakdown on the voltage edge pulse as a result the carbon ion and proton beam is generated. This beam has the following parameters: current density is about  $400 \text{ A/cm}^2$  (in focus): applied voltage is up to 450 kV.

The accelerator is designed to research on the interaction of charged particles pulsed beams with the materials and for development of the technological processes of material modification.

**Keywords:** *High-voltage pulsed generator, Pulsed accelerator, Electron and ion beam.*