

Abstract Submitted  
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**Characterization of the flashover plasma across a ceramic-vacuum interface in a high-power microwave tube**<sup>1</sup> TAO XUN, Academy of Advanced Studies in Interdisciplinary Research, National University of Defense Technology, P.R.China — Driven by a negative high voltage pulse (-500 kV, 150 ns), the flashover plasma luminescence process and its spectrum characteristics were observed by high-speed framing camera and specter. A brighter and faster luminescence process with an expansion velocity of  $2.1 \times 10^8$  cm/s. The radial and angular expansion velocity components were analyzed and got respectively. A higher average electron temperature of 4.57 eV was obtained from the spectrum results. Particle-in-cell simulation results of electron multiplication process and their movement along the ceramic surface with different primary electron emission modes agreed with the experimental observations. All these results indicate that since the explosive emission provides more energy than field emission and causes stronger secondary avalanche and gas ionization processes, the surface flashover initiated with explosive electron emission can occur much easier and develop faster. This work can give a reference for evaluation and design of ceramic vacuum interfaces for high-current applications.

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