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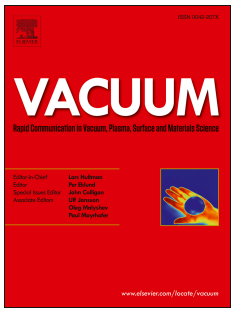

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Imaging and motion of cathode group spots during pulse-enhanced vacuum arc evaporation

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ABSTRACT

Pulse-enhanced vacuum arc evaporation (PEVAE) which combines pulsed and direct current operation of the arc source is a new approach in cathodic arc evaporation technology. One potential advantage is to deflect the arc along new paths over the target and prevent it from moving in only preferred areas. In this work, the cathode group spots (GSs) are photographed using a high-speed digital camera with exposure time of 100 μs and 25 ms and the influence of the pulse current and nitrogen pressure on the motion of the GSs including velocity and distribution are investigated. The experimental results reveal two types of GSs. With respect to the traditional DC arc current of 100 A, the GSs