

Computer simulation for an array based on capillary discharge

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Pulsed plasma jets are often used in various technical and scientific applications and can be formed by using a capillary discharge with an evaporating wall (CDEW) [1-10]. The CDEW is a powerful pulsed plasma-dynamic discharge whose plasma is created in a dielectric cylindrical channel filled to facilitate electrical breakdown by a metallized powder. In this case, the pulsed electric current flows through the cylindrical channel and forms a dense hot plasma in it, which flows through the output section of the CDEW, having a high emissivity. We modelled a two dimensional plasma array based on series connected capillary discharge. Each capillary device is composed a CDEW. Numerical simulation is performed and spatial distributions of pressure, temperature, velocity and Mach number in a pulsed capillary discharge jet and a system of pulsed jets at different instants of time are obtained. The structure of an underexpanded supersonic jet that expires from the working channel of the CDEW is investigated.

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