

PLASMA LINEATION ANODE

ABSTRACT OF THE DISCLOSURE

A plasma spray device is provided. The plasma spray device includes a plasma chamber region for having a plasma formed and a throat region coupled to the plasma chamber region. The throat region has an end surface and an axial bore. The axial bore is formed substantially along a longitudinal axis of the throat region, and has a non-circular cross-sectional shape. The axial bore at the end surface is for ejecting a plasma stream. The axial bore may include a plurality of grooves formed substantially along the longitudinal axis of the throat region. The cross-sectional shape of the axial bore may alternatively be defined by a plurality of overlapping substantially circular lobes. The plasma stream has a flow that is lineated before the plasma stream is ejected from the axial bore. The plasma stream has an overall particle pattern angle of less than about 50° after the plasma stream exits the axial bore.