

## Poster-Session

### Influence of cathode grid geometry on the operation behaviour of cylindrical inertial electrostatic confinement plasma sources in jet mode

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Inertial electrostatic confinement (IEC) plasma sources have gained significant attention for their potential applications in fusion reactors and space propulsion. The operating mode is dependent on the grid geometry and should be selected according to the application purpose. A jet mode with an emitting plasma plume is achieved due to an asymmetry in the cathode grid. This plasma plume can also be utilized for plasma surface treatment, such as thin film deposition. However, the parameters required for such applications are not yet fully understood and the geometry of the IEC plasma source needs to be adjusted accordingly in terms of chamber size, plasma distribution, pressure range and gas type. In this study, a cylindrical IEC plasma source was developed to analyse the impact of cathode diameter, transparency and outlet area on the jet properties and operating range of the jet mode. Our findings reveal a strong similarity between IEC plasma sources and hollow cathode discharges.