

Characterization of laterally colliding plasma plumes formed by the multi-species target

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Interaction between two seed plasma plumes and subsequently formed interaction zone have been investigated in vacuum and wide range of ambient conditions. Different combination of solid targets, e.g. carbon, aluminium, nickel, tungsten etc. have been used in present study. The time resolved fast imaging and optical time-of-flight techniques have been utilised to investigate the formation, dynamical and spectral behaviour of the seed plasma plumes as well as interaction zone. Also optical time-of-flight technique has been employed to observe the velocity distribution of both the ionic and neutral particles in both the regions. The key features, such as shape, size and dynamics of the primary plume as well as resultant interaction zone have been examined. Observed dynamical and geometrical features of the interaction zone are explained on the basis of plasma parameters and kinetic energy imbalance of the interacting seed plumes. This experimental findings have important roles in generation of multi-species plasma plume and to control their contribution in different applications.

References

- [1] Bhupesh Kumar, R. K. Singh, Sudip Sengupta, P. K. Kaw, and Ajai Kumar, *Physics of Plasmas* **21**, 083510 (2014)