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Title: Characteristics of plasma plume in fiber laser welding of aluminum alloy

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### Research Highlights

- ◆ Spectroscopic properties of fiber laser induced Al plasma plume are measured.
- ◆ The plume is usually a metal vapor dominated weakly ionized plasma.
- ◆ The plume is a strongly ionized plasma after laser power is higher than 5 kW.
- ◆ Plasma shielding effect must be considered after laser power reaches 5 kW.
- ◆ Plasma shielding effect is dominated by inverse bremsstrahlung absorption.

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