

Online Spectroscopic Diagnostics

The group in this study has long time experiences and the needed experimental setups on the spectroscopic diagnoses of plasma. Various on-line optical diagnostics, including fast speed photography, emission, laser induced fluorescence (LIF), laser absorption measurements, have been applied to probe the plasma properties produced during laser ablation or chemical vapor deposition.

From the emission and/or laser absorption spectroscopic diagnostics, the plasma induced during laser material interaction can be characterized in detail with almost all the major parameters. The three-dimensional space- and time-resolved electronic temperature, particle (atoms, ions) densities, explosion rate of the plasma can all be and determined. The scientifically-interested three-dimensional space-resolved line-broadening can also be measured.

These studies will reveal the fundamental relationships between the plume/plasma properties and the processing parameters. The deep understand of these relationships is essential to establish the corresponding on-line sensor and feedback control systems.

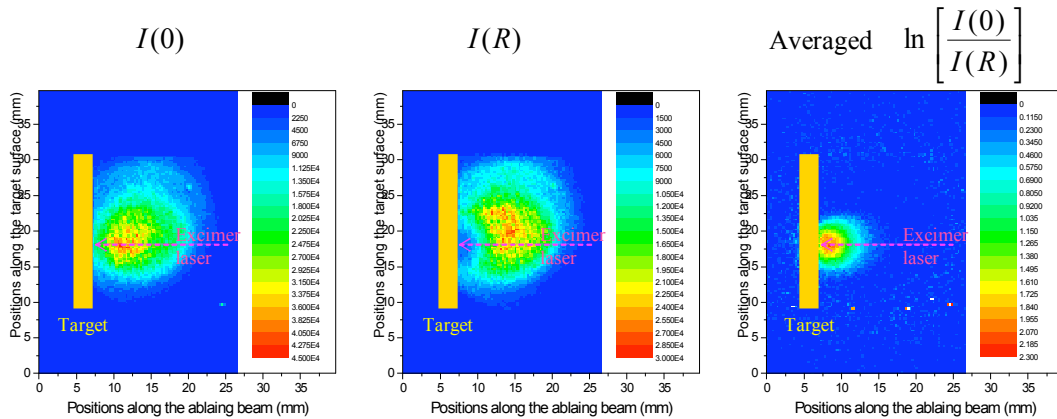


Fig. Typical images of the laser absorption measurements.