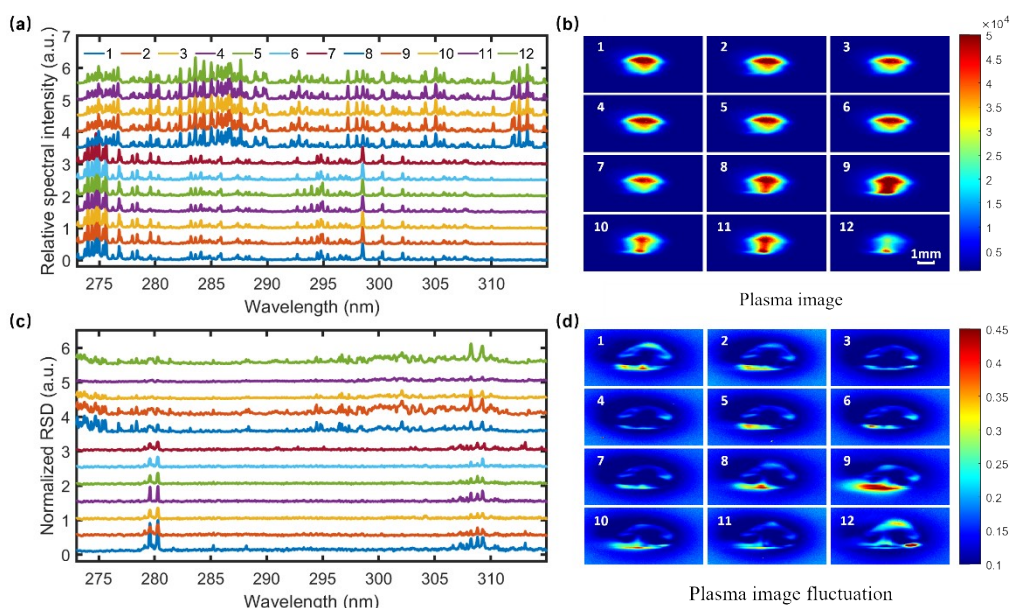
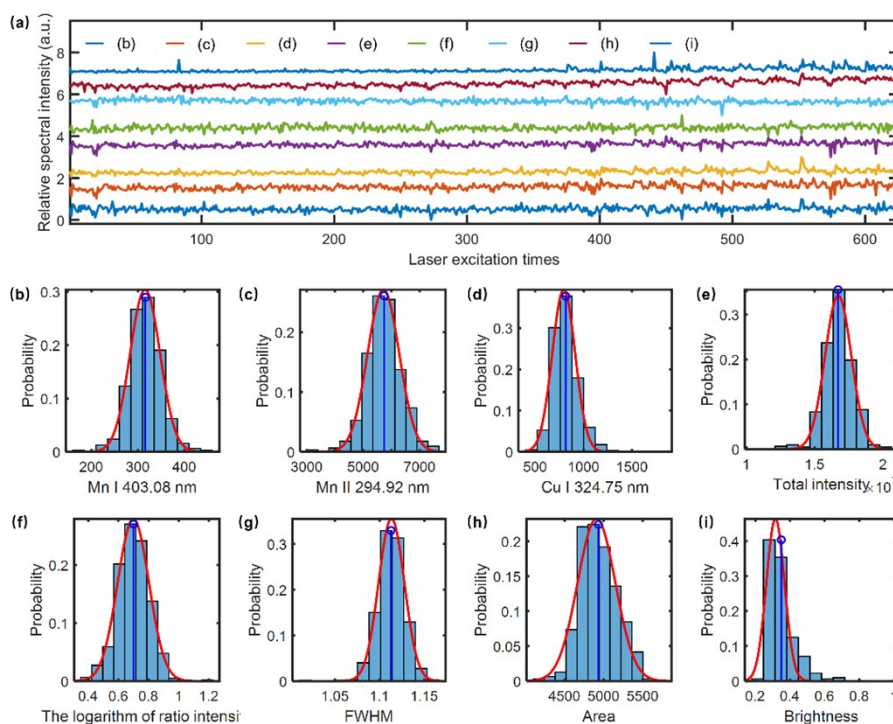


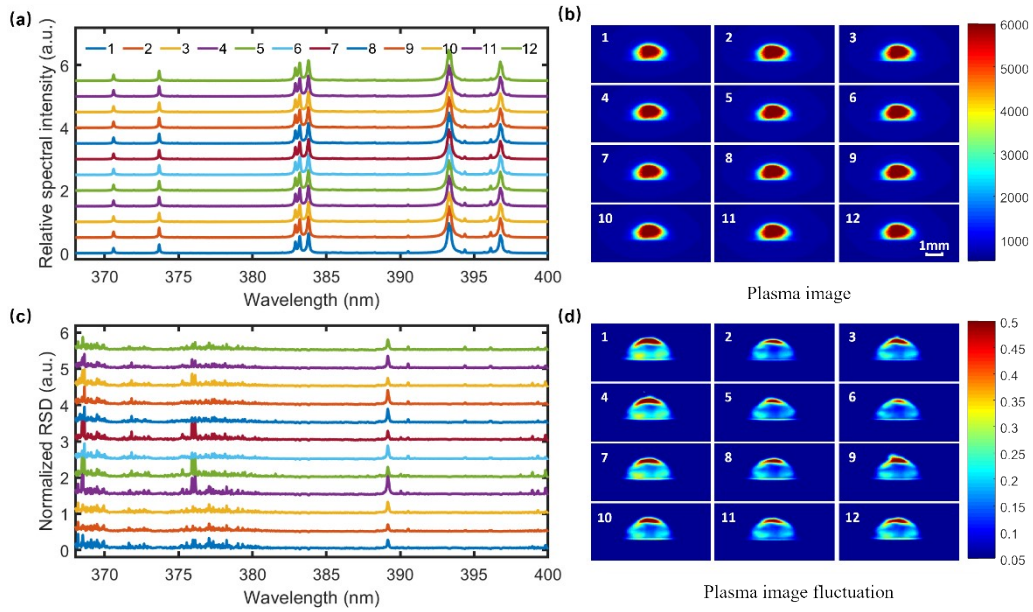
Supplement Material



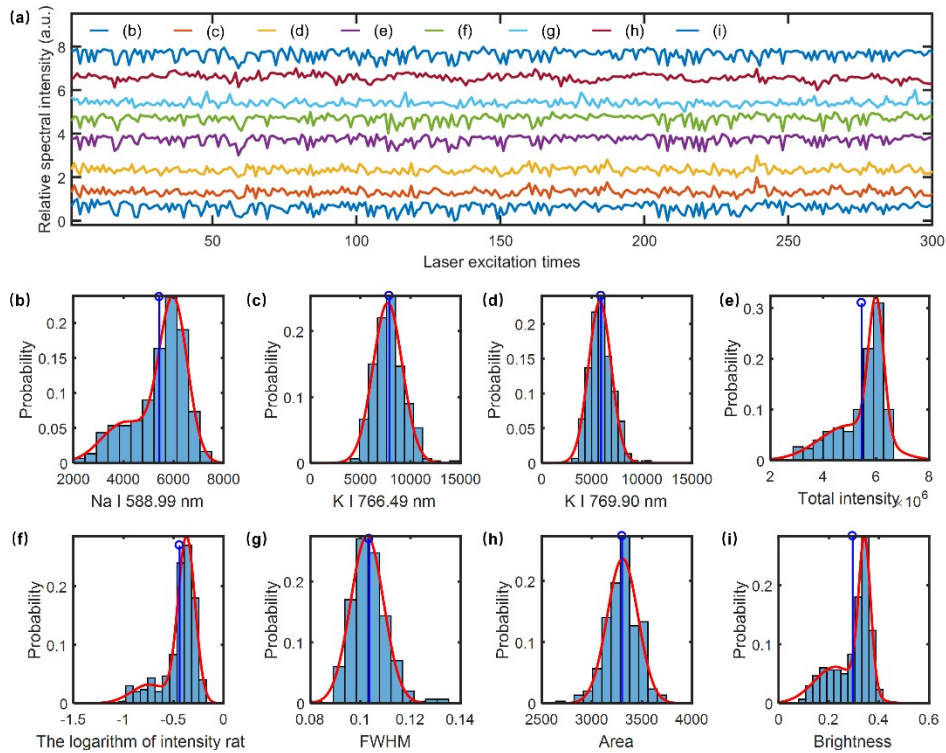
**Figure 1.** (a) LIBS spectra, (b) plasma images and (c), (d) their normalized RSD of alloy steel samples



**Figure 2.** (a) Line graph and (b) - (i) probability distribution histograms of the intensities of Mn I 403.08 nm, Mn II 294.92 nm and Cu I 324.75 nm, total intensity, logarithm of intensity ratio of Fe I 248.33 nm to Fe I 373.49 nm, FWHM of H I 656.29 nm, area and brightness of plasma images



**Figure 3.** (a) LIBS spectra, (b) plasma images and (c), (d) their normalized RSD of ore pressed samples



**Figure 4.** (a) Line graph and (b) - (i) probability distribution histograms of the intensities of Na I 588.99 nm, K I 766.49 nm and K I 769.90 nm, total intensity, logarithm of intensity ratio of Ca II 315.89 nm to Ca II 854.21 nm, FWHM of H I 656.29 nm, area and brightness of plasma images